DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO
ATTENTION OF

April 30, 2013

Engineering/Planning Division
Geo-Environmental Engineering Branch

Ms. Lynne Jennings
EPA - New England, Region 1
5 Post Office Square - Suite 100
Mail Code OSRR7-3
Boston, Massachusetts 02109-3912

Mr. Len Pinaud
Commonwealth of Massachusetts
Department of Environmental Protection – Southeast Regional Office
20 Riverside Drive
Lakeville, Massachusetts 02347

Re: Impact Area Groundwater Study Program (IAGWSP), Final Central Impact Area Interim Environmental Monitoring Report, January 2011 through December 2011, dated April 2013

Dear Ms. Jennings and Mr. Pinaud:

On behalf of the Army National Guard's Impact Area Groundwater Study Program (IAGWSP), the U.S. Army Corps of Engineers (USACE) is pleased to provide the Final version of the subject report.

The Draft version of this document was submitted in June 2012. Comments were received from the U.S. Environmental Protection Agency (EPA) in a letter dated September 6, 2012, and from the Massachusetts Department of Environmental Protection (MassDEP) in a letter dated June 27, 2012. A Response to Comments Letter (RCL) and a track changes version of the revised report was submitted by e-mail on October 12, 2012. Additional figures and a revised table (Table 4-1) were submitted by e-mail on October 31, 2012, and November 1, 2012, respectively. EPA provided additional comments on the RCL on December 10, 2012. A comment resolution meeting (CRM) was held on January 16, 2013.

A Memorandum of Resolution (MOR) was provided for EPA and MassDEP comments on February 13, 2013, and February 22, 2013, respectively. EPA provided Approval of the MOR and additional comments in a letter dated April 2, 2013. MassDEP concurred with the MOR in a letter dated February 26, 2013. The MORs and the approval letters from EPA and MassDEP are provided in Appendix C of the Final report. A signed Project Note summarizing the approved changes to the monitoring well network is included as Appendix E of the Final report.

Please contact Dave Hill of the IAGWSP, or Marie Wojtas of the USACE, if there are any questions.

Sincerely,

Scott E. Acone, P.E.
Chief, Engineering/Planning Division

Enclosures
EPA 1 copy and 1 CD
MassDEP 1 copy and 1 CD

Copy Furnished:
IAGWSP: Ben Gregson (letter only), Dave Hill (1 copy), and Marcia Goulet (5 copies and 5 CDs)
EPA: Desiree Moyer (1 copy and 1 CD), Erin Sanborn (1 CD)


Impact Area Groundwater Study Program

*FINAL*

# Central Impact Area
# Interim Environmental Monitoring Report
# January 2011 through December 2011

Camp Edwards
Massachusetts Military Reservation
Cape Cod, Massachusetts

April 2013

*Prepared for:*
Army National Guard
Impact Area Groundwater Study Program
Camp Edwards, Massachusetts

*Prepared by:*
U.S. Army Corps of Engineers
New England District
Concord, Massachusetts

## Disclaimer

This document has been prepared pursuant to government administrative orders (U.S. EPA Region I SDWA Docket No. I-97-1019 and 1-2000-0014) and is subject to approval by the U. S. Environmental Protection Agency. The opinions, findings, and conclusions expressed are those of the authors and not necessarily those of the Environmental Protection Agency.

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## Acronyms and Abbreviations

| | |
|---|---|
| 3-D | three-dimensional |
| AFCEE | Air Force Center for Environmental Excellence |
| cf | cubic feet |
| COC | contaminant of concern |
| ETR | extraction, treatment, and reinjection |
| FS | feasibility study |
| GAC | granular activated carbon |
| GMP | groundwater monitoring plan |
| gpm | gallons per minute |
| HMX | octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine |
| IX | ion exchange |
| J | estimated value |
| MMR | Massachusetts Military Reservation |
| msl | mean sea level |
| MTU | modular treatment unit |
| ND | nondetect |
| RDX | hexahydro-1,3,5-trinitro-1,3,5-triazine |
| TOM | top of the groundwater mound |
| U | non-detected value |
| µg/L | micrograms per liter |

## 1.0 INTRODUCTION

The 2,200-acre Camp Edwards Impact Area is centrally located on the 22,000-acre Massachusetts Military Reservation (MMR) in the towns of Bourne and Sandwich on Cape Cod, Massachusetts. The Impact Area was the primary target area for artillery and mortar firing from the Gun and Mortar positions from the 1930s until 1997. The Central Impact Area (CIA) is a 330-acre parcel within the Impact Area where targets were concentrated. The Central Impact Area is believed to be the main source of groundwater contamination that has been detected beneath the Impact Area (Figure 1-1).

This report summarizes the results of sampling conducted in accordance with the 2006 Groundwater Monitoring Plan (GMP) (AMEC, 2006) and recommendations made in the 2007 Groundwater Monitoring Report (AMEC, 2008). As agreed with the regulatory agencies it also includes groundwater data from wells within the thin plume of RDX that stretches between the 2000-meter berm at the J-1 range into the eastern boundary of the CIA that was first discovered in 2007.

## 2.0 SAMPLING PROGRAM

In 2011, a total of 80 well screens were sampled for explosives and 49 well screens were sampled for perchlorate at least once (Figures 2-1 and 2-2, Table 2-1). Explosives and perchlorate samples were collected in May/June 2011 and November/December 2011. A total of 127 samples (excluding duplicates) were analyzed for explosives and 81 samples (excluding duplicates) were analyzed for perchlorate. Table 2-1 presents the analytical parameters and sampling frequency for each monitoring well screen included in the 2011 monitoring program.

# 3.0 CHEMICAL RESULTS

Monitoring results are discussed in Section 3.1 and monitoring trends are discussed in Section 3.2. A summary of perchlorate, RDX, HMX, TNT, 2A-DNT, and 4A-DNT results are provided in Table 3-1. The analytical data packages can be found in EDMS under the appropriate sample delivery group (SDG) reference number. All Long Term Monitoring and System Performance and Ecological Impact Monitoring (SPEIM) data are validated at 90% Tier II and 10% Tier III USEPA data validation levels according to the project Quality Assurance Project Plan (QAPP). Data presented in the report are validated according to the governing project QAPP, which is available on EDMS (document ID 9086). The complete list of analytical results is presented in Table 3-2. The plan view of RDX cross-section lines are presented in Figure 3-1 and cross-sections showing the vertical distribution of RDX are presented in Figures 3-2 through 3-4. Color coded maps depicting RDX detections/non-detections during the reporting period are presented in Figures 3-5 through 3-7, and include trend plots for select well screens, which are discussed in Section 3.2. The plan view of perchlorate cross-section lines are presented in Figure 3-8 and cross-sections showing the vertical distribution of perchlorate are presented in Figures 3-9 and 3-10. A similar map depicting perchlorate detects/non-detects during the reporting period is presented in Figure 3-11, which again includes trend plots to be discussed in Section 3.2. The plan view of the perchlorate and RDX plumes are slightly modified versions of those obtained from the Draft CIA Feasibility Study (Tetra Tech EC, 2010). Modifications were made using data collected since the Draft FS was developed. The following provides a discussion of the perchlorate and explosives results.

## 3.1 Monitoring Results

### 3.1.1 Explosives

RDX – of 127 samples collected and analyzed for RDX, 77 (excluding duplicates) contained RDX above the Method SW8330 reporting limit of 0.20 µg/L and 56 of those samples contained RDX above the current risk based concentration (RBC) of 0.6 µg/L. Twenty-five samples (excluding duplicates) contained RDX at concentrations greater than the EPA Lifetime Health Advisory of 2 µg/L. The maximum detected RDX concentration was 17.4 µg/L, which was measured in a sample collected from well MW-89M2 (28 November 2011). Historically, concentrations of RDX in this well have ranged from 5.6 µg/L to 21 µg/L. The USEPA risk based concentration for RDX, as of May 2012, is 0.61 µg/L.

Other Explosives – Other explosives detected in groundwater include: octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX), 2,4,6-trinitrotoluene (TNT), 2-amino-4,6-dinitrotoluene (2A-DNT), and 4-amino-2,6-dinitrotoluene (4A-DNT). The USEPA risk based concentration for 2A-DNT and 4A-DNT, as of May 2012, is 30 µg/L. A summary of concentrations for these analytes is presented below.

HMX – of 127 samples collected and analyzed for HMX, 32 (excluding duplicates) contained HMX above the Method SW8330 reporting limit of 0.20 µg/L. None contained HMX above the EPA Health Advisory for HMX of 400 µg/L or the EPA Tapwater screening criterion of 780 µg/L.

The maximum detected HMX concentration was 0.84 µg/L, which was measured in a sample collected from well MW-184M1 (17 November 11). The historical maximum HMX concentration detected was 4.7 µg/L in well MW-91S (April 2006).

TNT – of 127 samples collected and analyzed for TNT, one (excluding duplicates) contained TNT above the Method SW8330 reporting limit of 0.20 µg/L. None contained TNT above the EPA Health Advisory of 2 µg/L or the EPA Tapwater screening criterion of 2.2 µg/L. The maximum detected TNT concentration was 1.07 µg/L, which was measured in a sample collected from well MW-91S (31 May 2011). The historical maximum concentration of TNT was 1.6 J µg/L in well MW-40S in October 2003.

2A-DNT – of 127 samples collected and analyzed for 2A-DNT, one (excluding duplicates) contained 2A-DNT above the Method SW8330 reporting limit of 0.20 µg/L. None contained 2A-DNT above the EPA Tapwater screening criterion of 73 µg/L. The maximum detected 2A-DNT concentration was 0.44 µg/L, which was measured in a sample collected from well MW-91S (31 May 2011). The historical maximum concentration of 2A-DNT of 0.82 µg/L was detected in well MW-40S in April 2005 and in well MW-91S in 2010.

4A-DNT – of 127 samples collected and analyzed for 4A-DNT, two (excluding duplicates) contained 4A-DNT above the Method SW8330 reporting limit of 0.20 µg/L. None contained 4A-DNT above the EPA Tapwater screening criterion of 73 µg/L. The maximum detected 4A-DNT concentration was 0.47 µg/L, which was measured in a sample collected from MW-91S (31 May 2011). The historical maximum concentration of 4A-DNT was 1.2 µg/L detected in well MW-40S in June 2001 and April 2005.

### 3.1.2 Perchlorate

In 2011, of 81 samples collected and analyzed for perchlorate, 52 (excluding duplicates) contained perchlorate above the Method SW6850 reporting limit of 0.20 µg/L (a reduction from 54 detections in 2010) and six of those samples contained perchlorate above the Massachusetts Maximum Contaminant Level (MMCL) / Massachusetts Contingency Plan (MCP) S-1 GW-1 groundwater standard of 2 µg/l. The three wells where perchlorate was above the MMCL of 2 µg/L included (MW-87M1, MW-88M2, and MW-89M2. The maximum perchlorate concentration reported in 2011 (9.98 µg/L) and was obtained from well MW-89M2 (28 November 2011). The previous historical maximum perchlorate concentration observed was also from this well and occurred on 3 June 2010 (9.2 µg/L). No samples exceeded the EPA Tapwater screening criterion of 11 µg/L or the EPA interim Lifetime Health Advisory for perchlorate of 15 µg/L.

## 3.2 Monitoring Trends

Wells selected for illustration have been selected to be representative of the upgradient (near source), main body, and leading edges of each plume and are meant to highlight obvious trends. Trend data for all wells was reviewed before selecting the trends for illustration.

### 3.2.1 Explosives

Eighteen (18) wells were selected to evaluate trends in RDX concentrations based on their screened elevations and the known distribution of the RDX (AMEC, 2008) (Figures 3-5 through Figure 3-7). Eight wells (MW-235M1, MW-91S, MW-101M1, MW-89M2, MW-184M1, MW-123M1, MW-223M2 and MW-249M2) were selected because they describe areas upgradient of the Main Plume, the Main Plume source area, the middle of the Main Plume and the leading edge of the Main Plume. Two wells (MW-477M2 and MW-487M2) were selected because they describe the middle and leading edge of the Upgradient Plume. Four wells (MW-203M2, MW-96M2, MW-113M2 and MW-02M2) were selected because they describe the upgradient and leading edge of the Northeast Plume. Two wells (58MW0016A and MW-183M1) were selected because they describe the upgradient and leading edge of the CS-19 Plume. Well MW-102M2 was selected to describe the Southwest Plumelet and well MW-178M1 was selected to describe the Northeast Plumelet. The following text describes the RDX trends in selected wells within and around the individual plumes and plumelets at the CIA.

#### *Main Plume*

The area upgradient of the RDX Main Plume is represented by well MW235-M1. The source of contamination at the MW-235M1 screen is likely somewhere just downgradient of the MW-244 cluster and the top of the MW-235M1 screen is approximately 33 feet below the water table Historically, RDX concentrations at this well were relatively low but increased and reached a maximum of 46 µg/L (1 May 2006). Since the peak concentration of 46 µg/L was measured, with few exceptions, RDX concentrations have declined dramatically to the most recently measured concentration of 0.78 µg/L (2 December 2011). The current trend suggests that source of RDX measured at this well is no longer relevant and that the tail end of the plume is migrating through now.

The source area of the Main Plume is represented by wells MW-91S and MW-101M1. RDX concentrations at each of these wells are generally low and have been declining to various degrees. The highest concentration of RDX measured at well MW-91S was 24 µg/L in 2006. Prior to that time concentrations gradually increased from 1.2 µg/L (19 May 2000) and since then has steadily decreased to a recent low of 0.2 µg/L (31 May 2011). The highest concentration of RDX measured at well MW-101M1 was 4 µg/L, which was measured in November 2006. Concentrations in this well have continually fluctuated from 1 to 4 µg/L and most recently have increased from a historical low of 0.55 µg/L (27 May 2010) to its current value of 2.9 µg/L.

The middle of the Main Plume is represented by wells MW-89M2 and MW-184M1 and while RDX concentrations have been steadily increasing at MW-89M2 they have been steadily decreasing at MW-184M1. The RDX concentration of 17.4 µg/L (28 November 2011) recently measured at well MW-89M2 is near the historic high concentration of 21 µg/L (2 June 2009) and is more than triple the historic low concentration of 5.6 µg/L (16 January 2003). The increasing concentrations of RDX at well MW-89M2 likely indicate that the plume is still actively migrating through this area and that concentrations will likely remain elevated at this location for some

time. The decreasing concentrations at MW-184M1 are along the edge of the Main Plume and probably represent the tail of the plume that is currently moving through the area of MW-89M2.

The leading edge of the Main Plume is represented by wells MW-123M1, MW-223M2 and MW-249M2 and of these three wells only the RDX concentrations at MW-123M1 are increasing to any significant degree. RDX concentrations at MW-123M1 were non-detect until 9 June 2008 when a concentration of 0.31 µg/L was measured and since that time concentrations have been increasing to the most recent value of 5.49 µg/L (5 December 2011). In contrast, RDX concentrations at MW-223M2 have been between 1.4 and 4 µg/L since 2002. The historic high concentration at well MW-249M2 was 1.6 µg/L (23 September 2004) but has remained less than 1 µg/L since that time and was most recently measured at 0.44 µg/L (22 November 2011).

### *Upgradient Plume*

The narrow plume located upgradient of the RDX Main Plume is situated near the 2000-meter berm of the J-1 Range. The middle of the Upgradient Plume is represented by well MW-477M2 and the leading edge of the plume is represented by well MW-487M2. Samples were first collected at MW-477M2 and at MW-487M2 in 2007. RDX concentrations at MW-477M2 and at MW-487M2 was initially 7.3µg/L and 8.1 µg/L, respectively. Since that time, the concentration at well MW-477M2 has fluctuated and was most recently 6.13 µg/L (20 May 2011) and the concentration at well MW-487M2 has decreased and was most recently 1.91 µg/L (31 May 2011).

### *Northeast Plumes*

The two connected plumes located northeast of the Main Plume are represented by upgradient wells (MW-02M2 and MW-113M2) and a leading edge well (MW-96M2). The RDX concentrations at both the upgradient wells MW-02M2 and MW-113M2 have been variable but steadily decreasing since they were first sampled in 1998 and 2000, respectively. The historic high concentration at MW-02M2 was 6 µg/L (19 November 2001) and the historic high concentration at MW-113M2 was 15 µg/L (30 April 2001). This suggests that the Northeast Plumes have largely migrated through the upgradient area and are continuing downgradient to eventually start showing up in the leading edge wells. The most recent concentration of RDX measured at MW-02M2 was 0.68 µg/L (16 November 2011) and the most recent concentration measured at MW-113M2 was 1.44 µg/L (17 November 2011).

The leading edge of the Northeast Plumes is represented by well MW-96M2, which has been non-detect since it was first sampled in 2000. Given that the upgradient concentrations were as high as 15 µg/L it is expected that at some time in the future concentrations at the leading edge wells will reflect those concentrations, albeit at a diminished level.

### *CS-19 Plume*

The CS-19 plume is currently part of the AFCEE monitoring program and has historically been monitored for RDX by AFCEE, even though the IAWSP has also been monitoring some wells in the plume for RDX. As such, RDX concentrations are discussed here but sampling at wells, in

and peripheral to the CS-19 plume, are being recommended in Section 4.0 for discontinued sampling by IAWSP to avoid duplication of efforts. The long and narrow CS-19 plume located southwest of the Main Plume is represented by a upgradient well (58MW0016A) and a leading edge well (MW-183M1). The RDX concentrations at 58MW0016A have been consistently ND. It is expected that this high concentration core of the CS-19 Plume has migrated downgradient and is expected to show up at well MW-201M2 in the future but at diminished levels.

The leading edge concentrations represented by MW-183M1 indicated that the RDX plume has not reached this downgradient location yet; however, RDX concentrations measured in 2010 showed a substantial increase that only occurred for a single sampling round.

***Northwest/Southwest Plumelets***

The small RDX plumelets located northwest and southwest of the main plume and are represented by well MW-178M1 and MW-102M2, respectively. RDX concentrations at the northwest plumelet have been variable but steadily decreasing since the first sample was collected in 2001. The historical high RDX concentration at the northwest plumelet was 5 µg/L (2 May 2005) and the most recent RDX concentration was 1.85 µg/L (2 December 2011). The concentrations at the Southwest Plumelet have been non-detect since the first measurement in 2000, with the exception of a single sample at a concentration of 3.8 µg/L (26 October 2006).

### 3.2.2 Perchlorate

Five (5) wells were selected to evaluate trends in perchlorate concentrations based on their screened elevations and the known distribution of the perchlorate (AMEC, 2008) (Figure 3-11). Well MW-38M3 was selected to describe the upgradient plume boundary; well MW-95M2 was selected to describe the northeast boundary of the plume; wells MW-87M1 and MW-89M2 were selected to describe the southwest and northeast interior of the plume; and MW88M2 was selected to describe the middle of the plume. The following text describes the perchlorate trends in selected wells within and around the plume at the CIA.

The southwest plume boundary is not currently represented since the elevation of the MW-39M2 screen is too shallow to effectively monitor perchlorate concentrations. However, the MW-39M1 screen is at an appropriate elevation and was determined to have ND perchlorate in measurements collected from August 2000 through August 2005. Measurements have not been collected at MW-39M2 since but a recommendation is being made in this EMR to sample MW-39M1 annually for perchlorate to provide a southwest boundary for the plume.

The upgradient portion of the perchlorate plume, as represented by MW-38M3, had concentrations that quickly dropped from 10 µg/L to below 2 µg/L in the first three sampling events beginning in 2000 with concentrations showing an increasing trend until 2007 and a decreasing trend since that time. The most recent concentration was 0.96 µg/L (17 November 2011) suggesting that the upgradient portion of the perchlorate plume in this area is largely diminished.

The monitoring well MW-95M2 represents perchlorate concentrations beyond the northeast boundary of the perchlorate plume. Perchlorate concentrations in MW-95M2 have never been above 2.0 µg/L. Additionally, concentrations in these wells have been variable but steadily declining to recently measured levels of non-detect at MW-39M2 and 0.23 µg/L (28 November 2011) at MW-95M2.

Monitoring wells, MW-87M1 and MW-89M2, represent RDX concentrations near the southwest and northeast lateral extent of the perchlorate plume, respectively. Concentrations at both of these wells have been consistently increasing since they were first sampled but seem to be leveling off at a concentration of approximately 5 µg/L at MW-87M1 and at a concentration of approximately 10 µg/L at MW-89M2. The center of the perchlorate plume is represented by MW-88M2 where concentrations have steadily increased since first being sampled up to a recently measured concentration of 5.46 µg/L (28 November 2011). The difference between well MW-88M2 and the lateral wells MW-87M1 and MW-89M2 is that concentrations in the central portion of the plume do not show any evidence of decreasing or even leveling.

## 4.0 RECOMMENDATIONS

Groundwater sampling for explosives and perchlorate has been ongoing at the CIA for over a decade and has provided a detailed water quality data set for the Central Impact Area plumes. Samples have been historically collected to quantify the nature and extent of contamination around the site as much as to monitor contaminants within clearly defined plumes. In most cases, monitoring has occurred semi-annually and at multiple screened elevations to provide for a clear understanding of the spatial and temporal distribution of perchlorate and explosives at the site.

During the 2011 sampling year, 127 samples were collected for explosives analysis and 81 samples were analyzed for perchlorate. As part of this annual monitoring report the groundwater data have been carefully reviewed and recommendations are being made to optimize the sampling network. The sampling program optimization recommended here is largely a reduction in the number of wells and frequency based on the information collected to date. Consideration has been given to both the magnitude of concentrations and the location of specific well screens and reductions are recommended for wells that are either redundant or that have demonstrated very low contaminant concentrations over the past several sampling rounds.

A summary of recommendations to existing wells in the monitoring program is presented in Table 4-1. Figure 4-1 is a map showing the proposed RDX monitoring network and Figure 4-2 is a map showing the proposed perchlorate monitoring network. Additionally, the following recommendations to either add or increase monitoring are being made to enhance the program. The approved changes to the monitoring well network is described in the Project Note included as Appendix E of this document.

- Consideration should be given to adding monitoring wells along Canal View Road to determine whether or not contaminants are migrating offsite.

- Monitoring well clusters MW-176, MW-223 and MW-42 should be considered for future inclusion in the monitoring plan and monitored for perchlorate to evaluate the efficiency of the extraction wells at capturing the perchlorate plume.

- Discontinue sampling MW-39M2 and monitoring MW-39M1 instead.

- The EPA and IAGWSP should consider the necessity of adding additional monitoring wells once the groundwater work is completed, including the addition of another well screen at existing monitoring well MW-442.

## 5.0 REFERENCES

AMEC, 2009. Draft Central Impact Area Feasibility Study. AMEC Earth and Environmental, Inc. Westford, Massachusetts, July 2009. [Environmental Data Management System (EDMS) Document ID 9221]

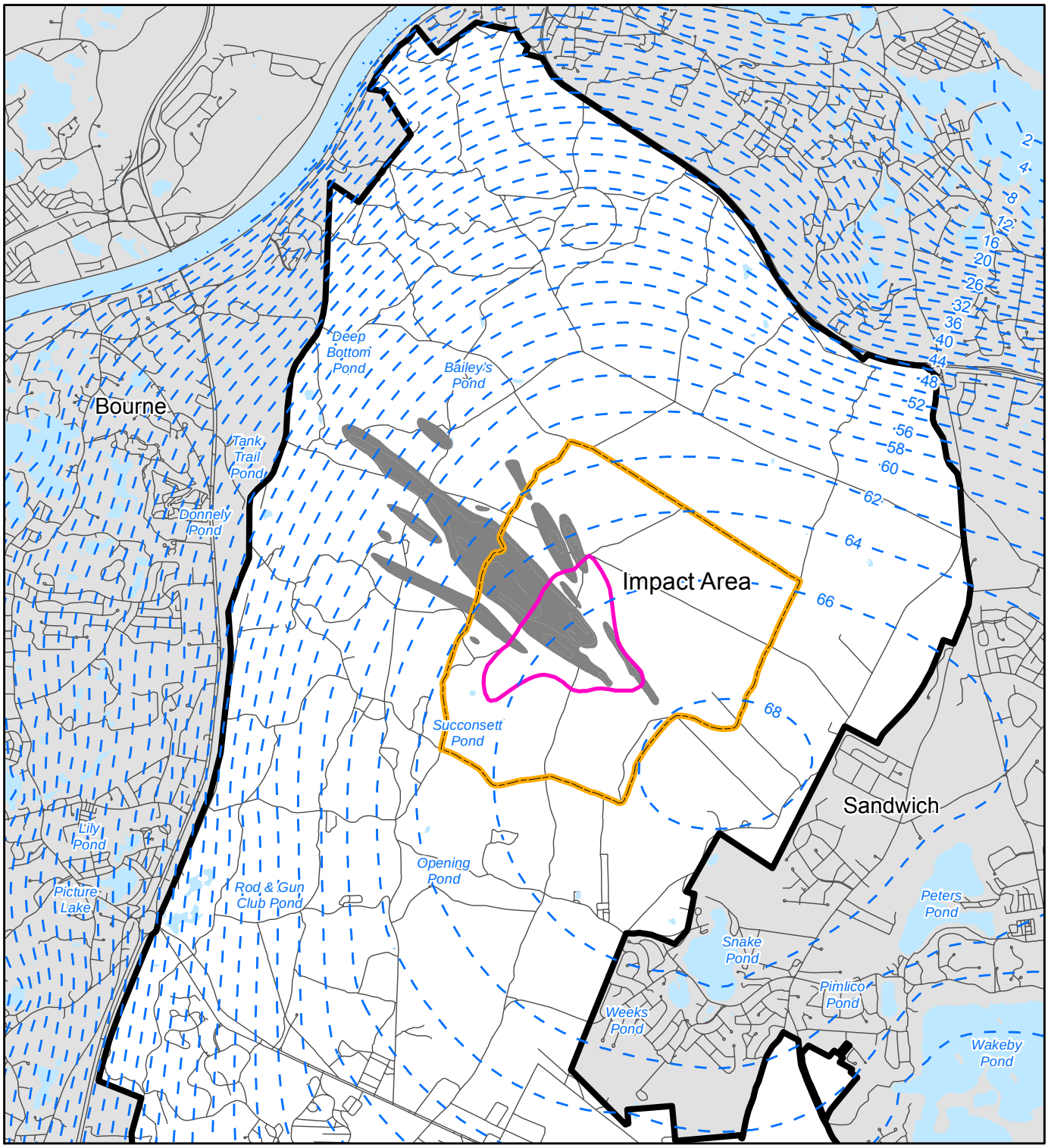
AMEC, 2008. Draft Central Impact Area Groundwater Monitoring Report (2007) and Near-Term Plume Migration Assessment. AMEC Earth and Environmental, Inc. Westford, Massachusetts, May 8, 2008. [EDMS Document ID 9050]

AMEC, 2006. Draft Impact Area Groundwater Monitoring Plan. AMEC Earth and Environmental, Inc. Westford, Massachusetts, January 24, 2006. [EDMS Document ID 8394]

ECC, 2007. Draft Generic Quality Assurance Project Plan. Impact Area Groundwater Study Program, Massachusetts Military Reservation, Cape Cod, Massachusetts. Prepared by ECC for U.S. Army Corps of Engineers, New England District, Concord, MA. November 2007. (EDMS Document No. 9086).

Tetra Tech EC, 2010. Draft Central Impact Area Feasibility Study. Tetra Tech, EC Inc. Boston, Massachusetts, December 2010. [EDMS Document ID 109312]

# FIGURES




Legend

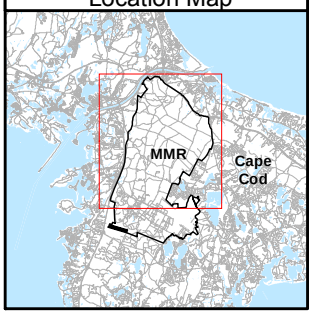
- MMR Boundary
- Impact Area Boundary
- Central Impact Area Boundary
- CIA RDX - Through November 2011 (Shown to the 0.6 µg/L Risk Based Concentration for RDX)

**Groundwater Elevation Contours**
(in feet above NGVD)

- Water Level Contours - MMR10

US Army Corps of Engineers
New England District

Location Map




0 2,500 5,000 Feet

N

Location of Central Impact Area

FIGURE 1-1

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December 17, 2012 DWN: MTW CHKD: KJH

Impact Area Groundwater Study Program

# Impact Area Groundwater Study Program

## LEGEND

**Monitoring Wells**

- Well Included in Explosives Monitoring Plan
- Well Not Included in Explosives Monitoring Plan

**RDX in Groundwater**
(Contours Dashed Where Inferred)

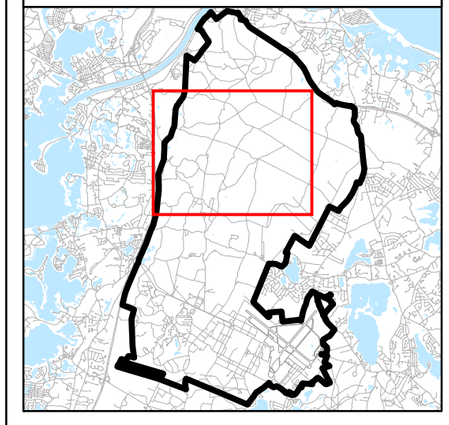
- 0.6 to 2 µg/L
- 2 to 6 µg/L
- Greater than 6 µg/L
- MMR Boundary
- Impact Area Boundary
- Central Impact Area Boundary
- CS-19

**Groundwater Elevation Contours**
(in feet above NGVD)

- Water Level Contours - MMR10

Note: Groundwater data through November 2011.
Contour lines dashed where inferred.

## LOCATION MAP



## NOTES & SOURCES

Basemap data from US Geological Survey 7 1/2 minute Topographic Maps. Source: MassGIS

## TITLE

Central Impact Area
Monitoring Wells in
Explosives Monitoring Program

0 1,500 Feet

US Army Corps of Engineers
New England District

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M:\MMR\2012\CIA\AnnRpt\MXDs\Fig3-1_050812.mxd
October 18, 2012 DWN: MTW CHKD: KJH

FIGURE 2-1

Northwest Plumelet
Southwest Plumelet
Northeast Plume
Main Plume
Upgradient Plume
Impact Area Boundary
Central Impact Area Boundary
MMR Boundary
Canal View RD
Orchard RD
Gibbs RD
Goat Pasture RD
Spruce Swamp RD
Burgoyne RD
Wood RD
Jefferson RD
Frank Perkins RD
Wheelock RD
Pew RD
Pocassett Sandwich RD
Chadwick RD
MW-249M2
MW-149M1
MW-212M1
MW-202M1
MW-42M2,M3
MW-178M1
MW-50D
MW-223M1,M2
MW-51M2
MW-176M1
MW-207M1
MW-23M1
MW-208M1
MW-203M2
MW-96M2
MW-180M3
MW-97M2
MW-123M1,M2
MW-86S,M1,M2
MW-209M1
MW-43M2
MW-03M2
MW-102M2
MW-204M1,M2
MW-183M1,M2
MW-95M1
MW-179M1
MW-110M2
MW-89M2,M3
MW-113M2
MW-201M2
MW-88M2
MW-02M2
MW-112M1,M2
MW-87M1
MW-98M1
MW-59S
MW-135M2
MW-99S
MW-106M1
MW-100M1
MW-105M1
MW-184M1
MW-111M2
MW-101M1
MW-44M1
MW-487M2
MW-38M3,M4
MW-93M1
MW-91S,M1
OW-2
MW-235M1
58MW0011D
58MW0016A
MW-94M1,M2
MW-90S
MW-25
MW-01S,M2
MW-477M1,M2
MW-37M2
MW-27
MW-485M1
MW-40S
MW-486M1
MW-85M1
MW-107M2
MW-115M1

# Impact Area Groundwater Study Program

## LEGEND

**Monitoring Wells**

- Well Included in Perchlorate Monitoring Plan
- Well Not Included in Perchlorate Monitoring Plan

**Perchlorate in Groundwater**
(Contours Dashed Where Inferred)

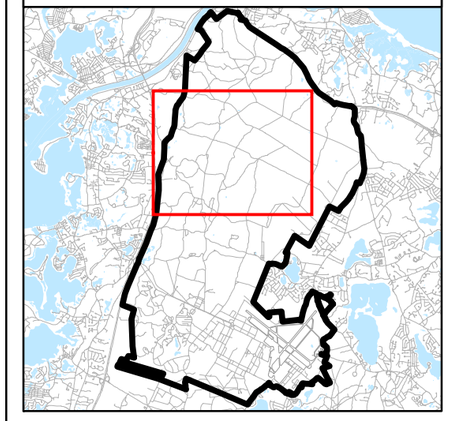
- 2 to 15 µg/L
- MMR Boundary
- Impact Area Boundary
- Central Impact Area Boundary

**Groundwater Elevation Contours**
(in feet above NGVD)

- Water Level Contours - MMR10

Note: Groundwater data through November 2011.
Contour lines dashed where inferred.

## LOCATION MAP



## NOTES & SOURCES

Basemap data from US Geological Survey 7 1/2 minute Topographic Maps. Source: MassGIS

## TITLE

Central Impact Area
Monitoring Wells in
Perchlorate Monitoring Program

0 1,500 Feet

N

US Army Corps of Engineers
New England District

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October 18, 2012 DWN: MTW CHKD: KJH

FIGURE
2-2

# Impact Area Groundwater Study Program

## LEGEND

**Monitoring Wells**

- Well Included in Explosives Monitoring Plan
- Well Not Included in Explosives Monitoring Plan

**RDX in Groundwater**
(Contours Dashed Where Inferred)

- 0.6 to 2 µg/L
- 2 to 6 µg/L
- Greater than 6 µg/L

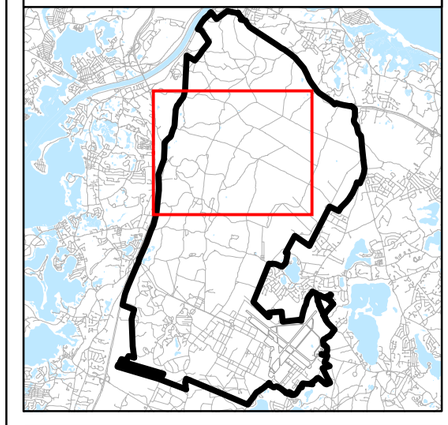
- MMR Boundary
- Impact Area Boundary
- Central Impact Area Boundary
- CS-19

**Groundwater Elevation Contours**
(in feet above NGVD)

- Water Level Contours - MMR10

Note: Groundwater data through November 2011.
Contour lines dashed where inferred.

## LOCATION MAP



## NOTES & SOURCES

Basemap data from US Geological Survey 7 1/2 minute Topographic Maps. Source: MassGIS

## TITLE

Central Impact Area
Lines of Cross-Section
through RDX Plume

0 1,500 Feet

N

US Army Corps of Engineers
New England District

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October 18, 2012 DWN: MTW CHKD: KJH

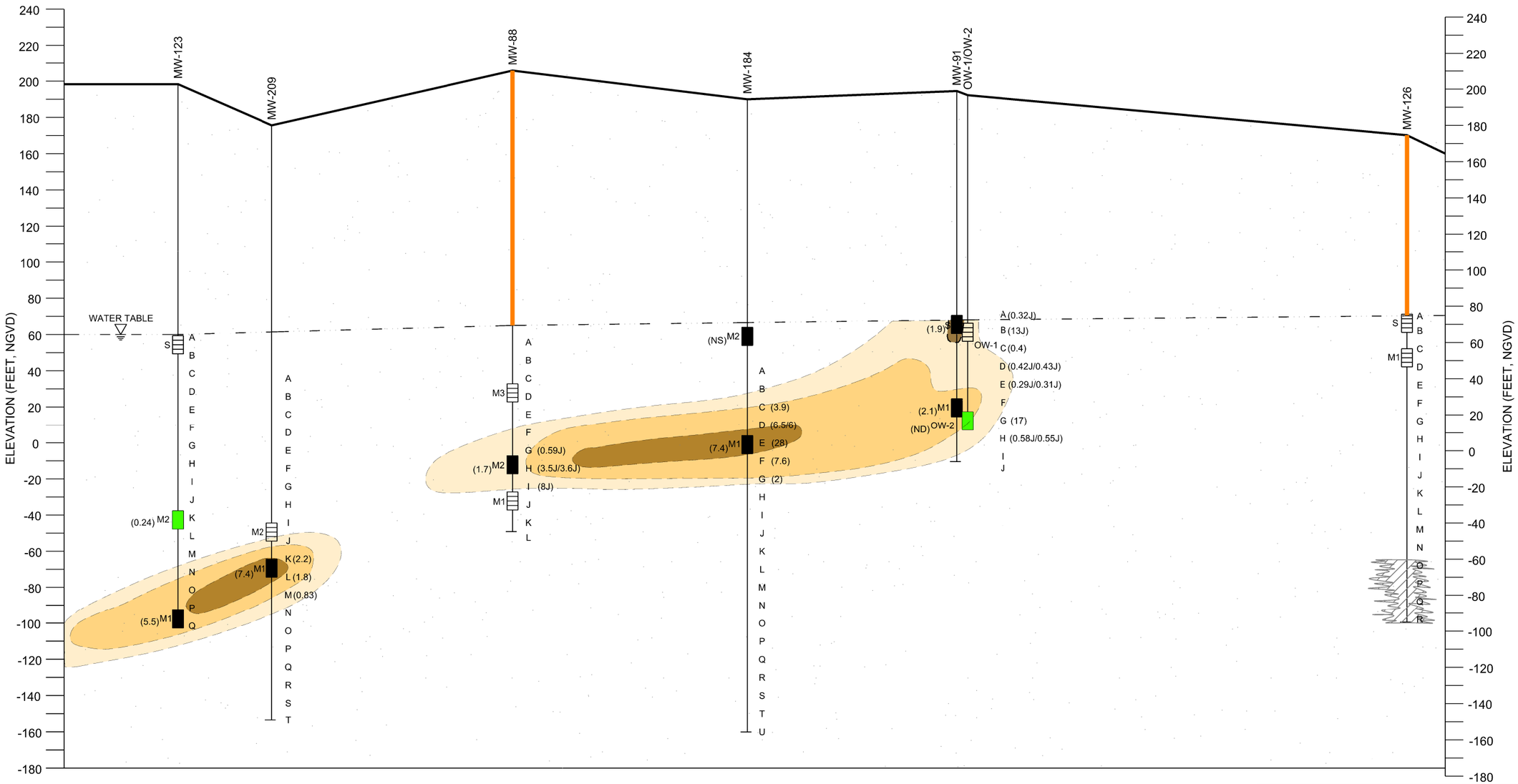
FIGURE
3-1

Northwest Plumelet
Southwest Plumelet
Main Plume
Northeast Plume
Upgradient Plume
Central Impact Area Boundary
Impact Area Boundary
MMR Boundary
D
C
G
G'
C'D'
MW-249M2
MW-149M1
MW-212M1
MW-202M1
MW-42M2,M3
MW-178M1
MW-50D
MW-223M1,M2
MW-51M2
MW-176M1
MW-207M1
MW-23M1
MW-208M1
MW-203M2
MW-96M2
MW-180M3
MW-97M2
MW-123M1,M2
MW-86S,M1,M2
MW-209M1
MW-43M2
MW-03M2
MW-102M2
MW-95M1
MW-204M1,M2
MW-183M1,M2
MW-89M2,M3
MW-179M1
MW-110M2
MW-88M2
MW-113M2
MW-201M2
MW-87M1
MW-02M2
MW-112M1,M2
MW-135M2
MW-98M1
MW-59S
MW-99S
MW-106M1
MW-100M1
MW-105M1
MW-111M2
MW-184M1
MW-101M1
MW-38M3,M4
MW-44M1
MW-487M2
MW-93M1
MW-91S,M1
MW-235M1
58MW0011D
58MW0016A
MW-94M1,M2
MW-90S
MW-25
MW-01S,M2
MW-477M1,M2
MW-37M2
MW-27
MW-485M1
MW-40S
MW-486M1
MW-85M1
MW-107M2
MW-115M1
Canal View RD
Orchard RD
Gibbs RD
Goat Pasture RD
Spruce Swamp RD
Burgoyne RD
Wood RD
Jefferson RD
Frank Perkins RD
Wheelock RD
Pew RD
Pocassett Sandwich RD
Chadwick RD

# CROSS SECTION C-C'

(NW) C

(SE) C'




NOTES:

1. FOR ORIENTATION OF CROSS SECTION, SEE FIGURE 1.
2. MOST RECENT VALIDATED DATA AS OF DECEMBER 6, 2011.
3. RDX PROFILE INTERVAL WITH NO VALUE INDICATES A NON-DETECT.
4. CONCENTRATIONS IN PPB
5. J = ESTIMATED CONCENTRATION
6. ND = NON-DETECT
7. NGVD = NATIONAL GEODETIC VERTICAL DATUM
8. * = UNVALIDATED DATA
9. TEMPORARY BORINGS SHOWN DASHED.

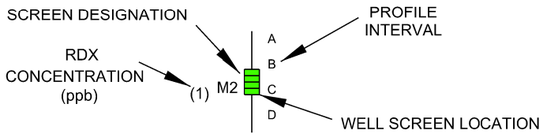
GEOLOGIC UNITS

- SAND
- SILT
- CLAY
- BEDROCK

LEGEND

RDX CONCENTRATIONS

- Not Sampled
- ND OR < 0.6 ppb
- > 0.6 ppb
- > 0.6 ppb and < 2 ppb
- > 2 ppb and < 6 ppb
- > 6 ppb and < 20 ppb
- Impact Area Boundary




HORIZONTAL SCALE:1"= 1000'

0' 500' 1000'

0' 30 60'

VERTICAL SCALE: 1" = 60'

# FIGURE 3-2

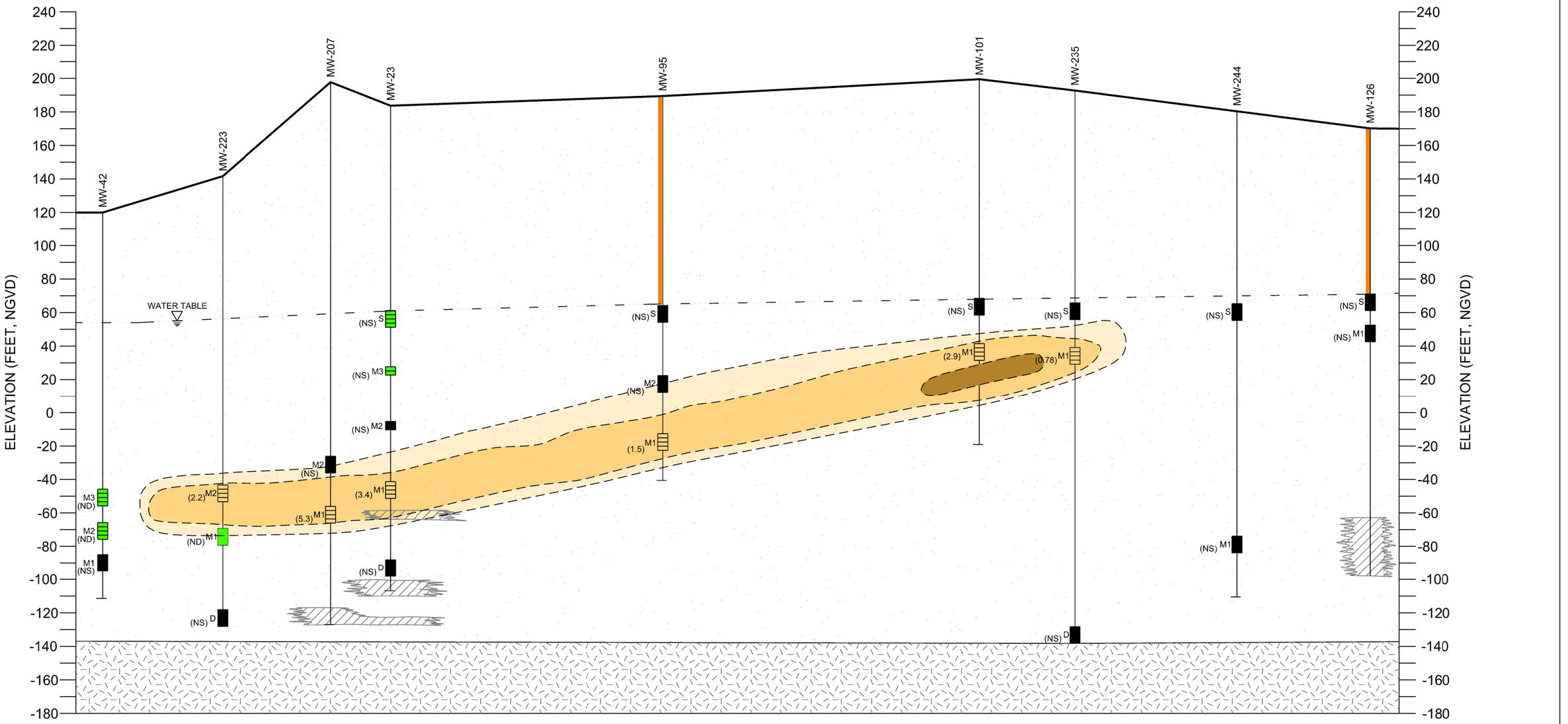
## CROSS SECTION C-C'
## RDX DISTRIBUTION IN GROUNDWATER
## DRAFT FEASIBILITY STUDY
IMPACT AREA GROUNDWATER OPERABLE UNIT

| REVISIONS | AMEC Project No: 2-7622-5018 | | |
|---|---|---|---|
| | DRAWN BY: RWB | DATE: 1/24 /13 | DRAWING NO. |
| | CHECKED BY: CA | | SEC C-C_2012.dgn |

# CROSS SECTION D-D'

(NW) D

(SE) D'




NOTES:

1. FOR ORIENTATION OF CROSS SECTION, SEE FIGURE 1.
2. MOST RECENT VALIDATED DATA AS OF DECEMBER 6, 2011.
3. RDX PROFILE INTERVAL WITH NO VALUE INDICATES A NON-DETECT.
4. CONCENTRATIONS IN PPB
5. J = ESTIMATED CONCENTRATION
6. ND = NON-DETECT
7. NGVD = NATIONAL GEODETIC VERTICAL DATUM
8. * = UNVALIDATED DATA
9. REVISED FROM CROSS-SECTION DEVELOPED BY AMEC IN OCTOBER 2007 AND PRESENTED IN THE JANURARY 2008 CIA REPORT - "DRAFT UXO/SOURCE INVESTIGATION FOR THE CENTRAL IMPACT AREA".

GEOLOGIC UNITS

- SAND
- SILT
- SAND+GRAVEL
- BEDROCK

LEGEND

RDX CONCENTRATIONS

- Not Sampled
- ND
- < 0.6 ppb
- > 0.6 ppb and < 2 ppb
- > 2 ppb and < 6 ppb
- > 6 ppb and < 20 ppb
- Impact Area Boundary

SCREEN DESIGNATION

RDX CONCENTRATION (ppb) (1) M2 WELL SCREEN LOCATION

HORIZONTAL SCALE:1"= 1200'

0' 600' 1200'

0' 30 60'

VERTICAL SCALE: 1" = 60'

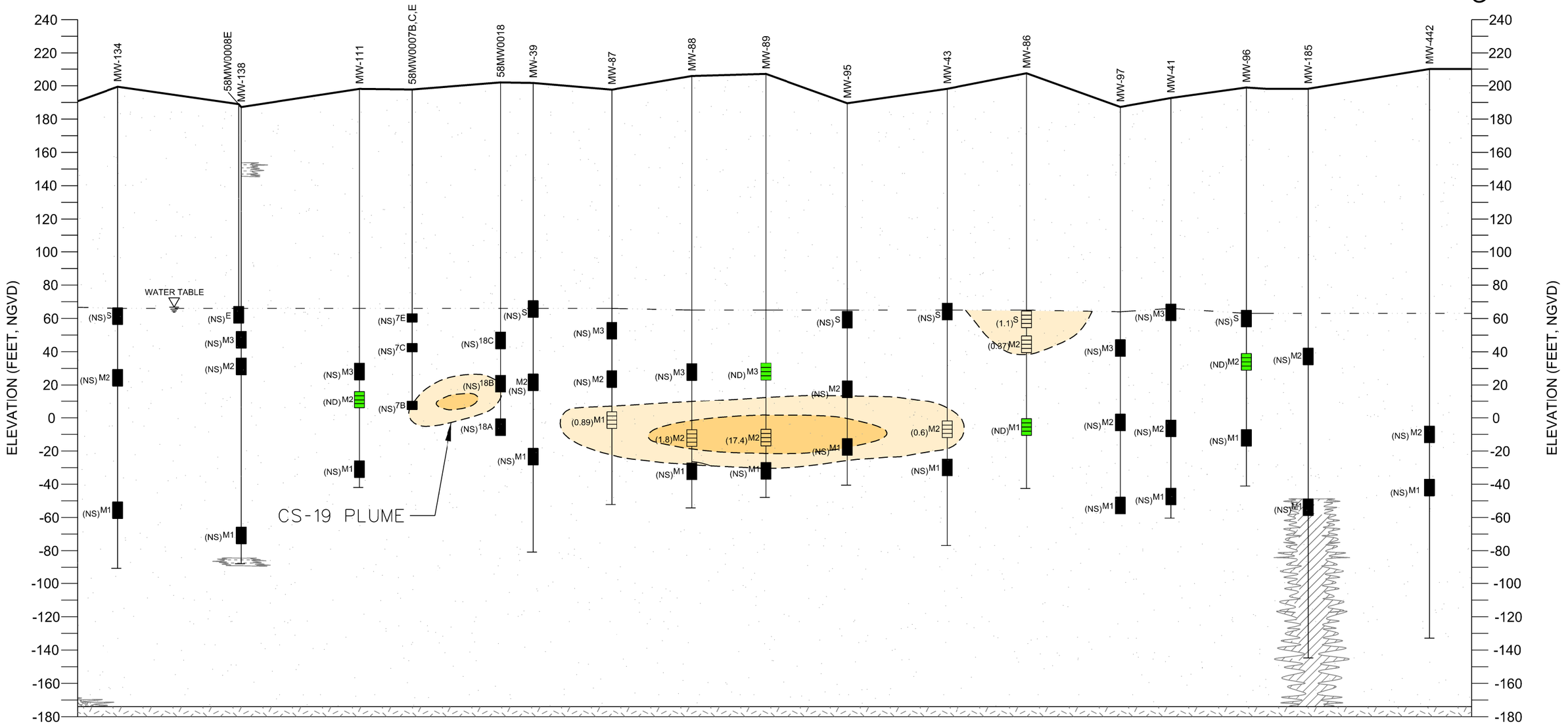
# FIGURE 3-3

## CROSS SECTION D-D'
## RDX DISTRIBUTION IN GROUNDWATER
## DRAFT FEASIBILITY STUDY
IMPACT AREA GROUNDWATER OPERABLE UNIT

| REVISIONS | AMEC Project No: 2-7622-5018 | | |
|---|---|---|---|
| | DRAWN BY: RWB | DATE: 1/24/13 | DRAWING NO. |
| | CHECKED BY: CA | | SEC D-D_2011.DGN |

# CROSS SECTION G-G'

(SOUTH) G — G' (NORTH)




NOTES:

1. FOR ORIENTATION OF CROSS SECTION, SEE FIGURE 1.
2. MOST RECENT VALIDATED DATA AS OF DECEMBER 6, 2011.
3. RDX PROFILE INTERVAL WITH NO VALUE INDICATES A NON-DETECT.
4. CONCENTRATIONS IN PPB
5. J = ESTIMATED CONCENTRATION
6. ND = NON-DETECT
7. NGVD = NATIONAL GEODETIC VERTICAL DATUM
8. * = UNVALIDATED DATA
9. REVISED FROM CROSS-SECTION DEVELOPED BY AMEC IN OCTOBER 2007 AND PRESENTED IN THE JANURARY 2008 CIA REPORT - "DRAFT UXO/SOURCE INVESTIGATION FOR THE CENTRAL IMPACT AREA".

GEOLOGIC UNITS

- SAND
- SILT
- CLAY
- BEDROCK

LEGEND

RDX CONCENTRATIONS

- Not Sampled
- ND
- < 0.6 ppb
- > 0.6 ppb and < 2 ppb
- > 2 ppb and < 6 ppb
- > 6 ppb and < 20 ppb

SCREEN DESIGNATION

RDX CONCENTRATION (ppb) (1) M2 — WELL SCREEN LOCATION

HORIZONTAL SCALE:1"= 550'

0' 275' 550'

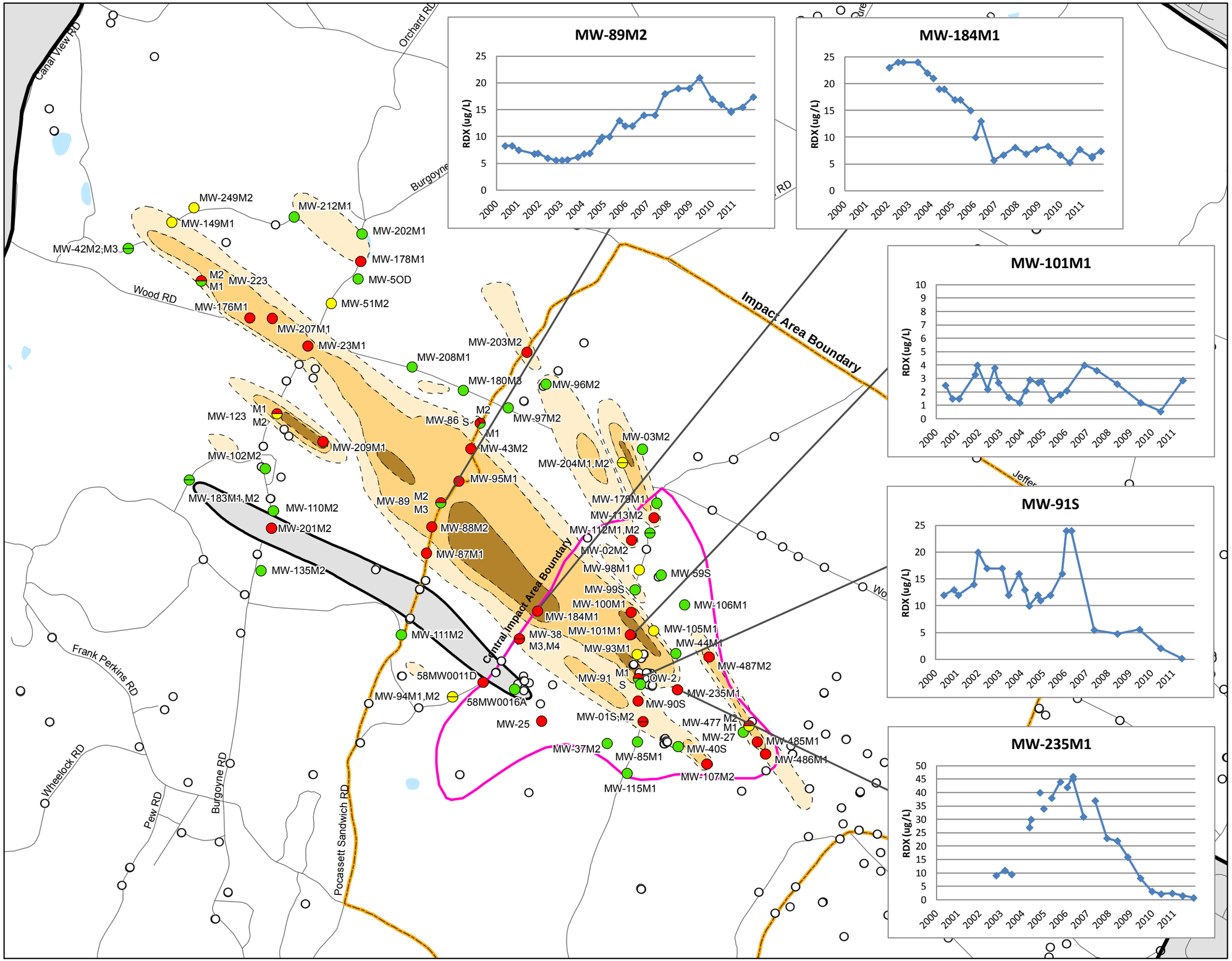
0' 30 60'

VERTICAL SCALE: 1" = 60'

# FIGURE 3-4

## CROSS SECTION G-G'
## RDX DISTRIBUTION IN GROUNDWATER
## DRAFT FEASIBILITY STUDY
IMPACT AREA GROUNDWATER OPERABLE UNIT

| REVISIONS | AMEC Project No: 2-7622-5018 | | |
|---|---|---|---|
| | DRAWN BY: RWB | DATE: 1/24/13 | DRAWING NO. |
| | CHECKED BY: CA | | SEC G-G_2011.DGN |



















# Impact Area Groundwater Study Program

## LEGEND

**Monitoring Wells**

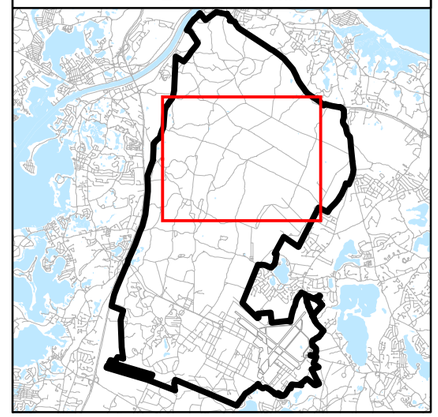
- Well Not Included in RDX Monitoring Plan
- No Detection
- Detection at or below 0.6 □g/L
- Detection above 0.6 □g/L
- Indicates different detections in different well screens

**RDX in Groundwater**
(Contours Dashed Where Inferred)

- 0.6 to 2 □g/L
- 2 to 6 □g/L
- Greater than 6 □g/L
- MMR Boundary
- Impact Area Boundary
- Central Impact Area Boundary
- CS-19

Note: Groundwater data through November 2011.
Contour lines dashed where inferred.

## LOCATION MAP



## NOTES & SOURCES

Basemap data from US Geological Survey 7 1/2 minute Topographic Maps. Source: MassGIS

## TITLE

Central Impact Area
Main and Upgradient Plumes
RDX Trend Plots

0 1,500 Feet

N

US Army Corps of Engineers
New England District

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FIGURE
3-5a

# Impact Area Groundwater Study Program

## LEGEND

**Monitoring Wells**

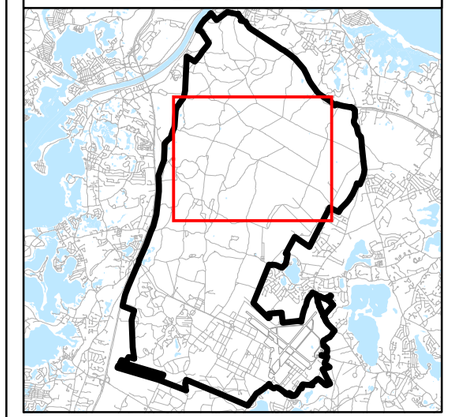
- Well Not Included in RDX Monitoring Plan
- No Detection
- Detection at or below 0.6 µg/L
- Detection above 0.6 µg/L
- Indicates different detections in different well screens

**RDX in Groundwater**
(Contours Dashed Where Inferred)

- 0.6 to 2 µg/L
- 2 to 6 µg/L
- Greater than 6 µg/L
- MMR Boundary
- Impact Area Boundary
- Central Impact Area Boundary
- CS-19

Note: Groundwater data through November 2011.
Contour lines dashed where inferred.

## LOCATION MAP



## NOTES & SOURCES

Basemap data from US Geological Survey 7 1/2 minute Topographic Maps. Source: MassGIS

## TITLE

Central Impact Area
Main and Upgradient Plumes
RDX Trend Plots

0 1,500 Feet

N

US Army Corps of Engineers
New England District

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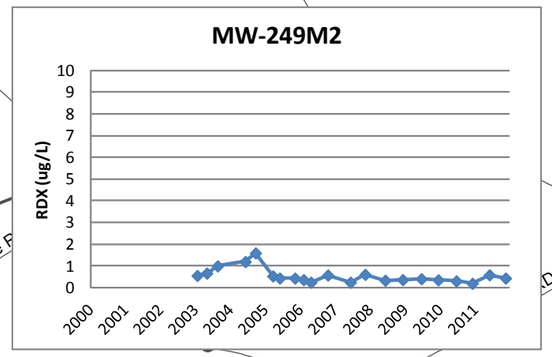
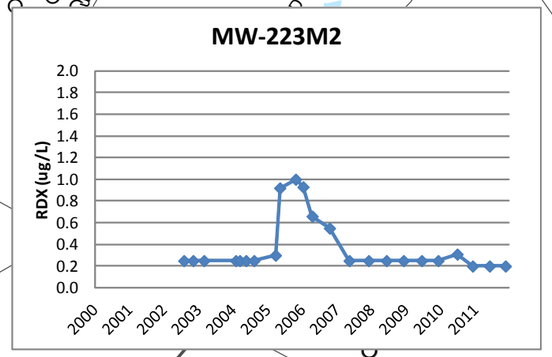
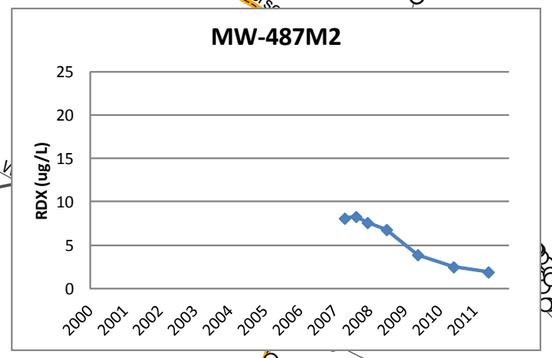
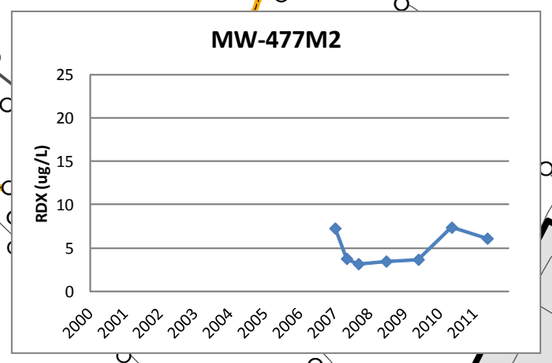
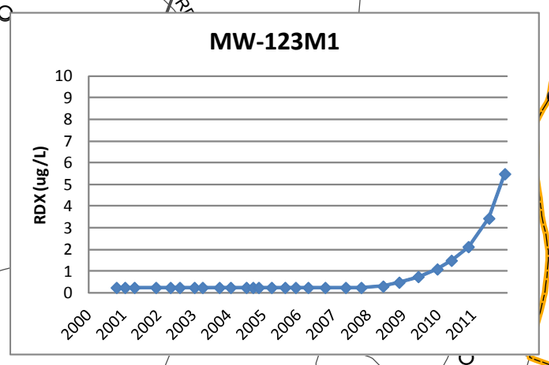
FIGURE 3-5b

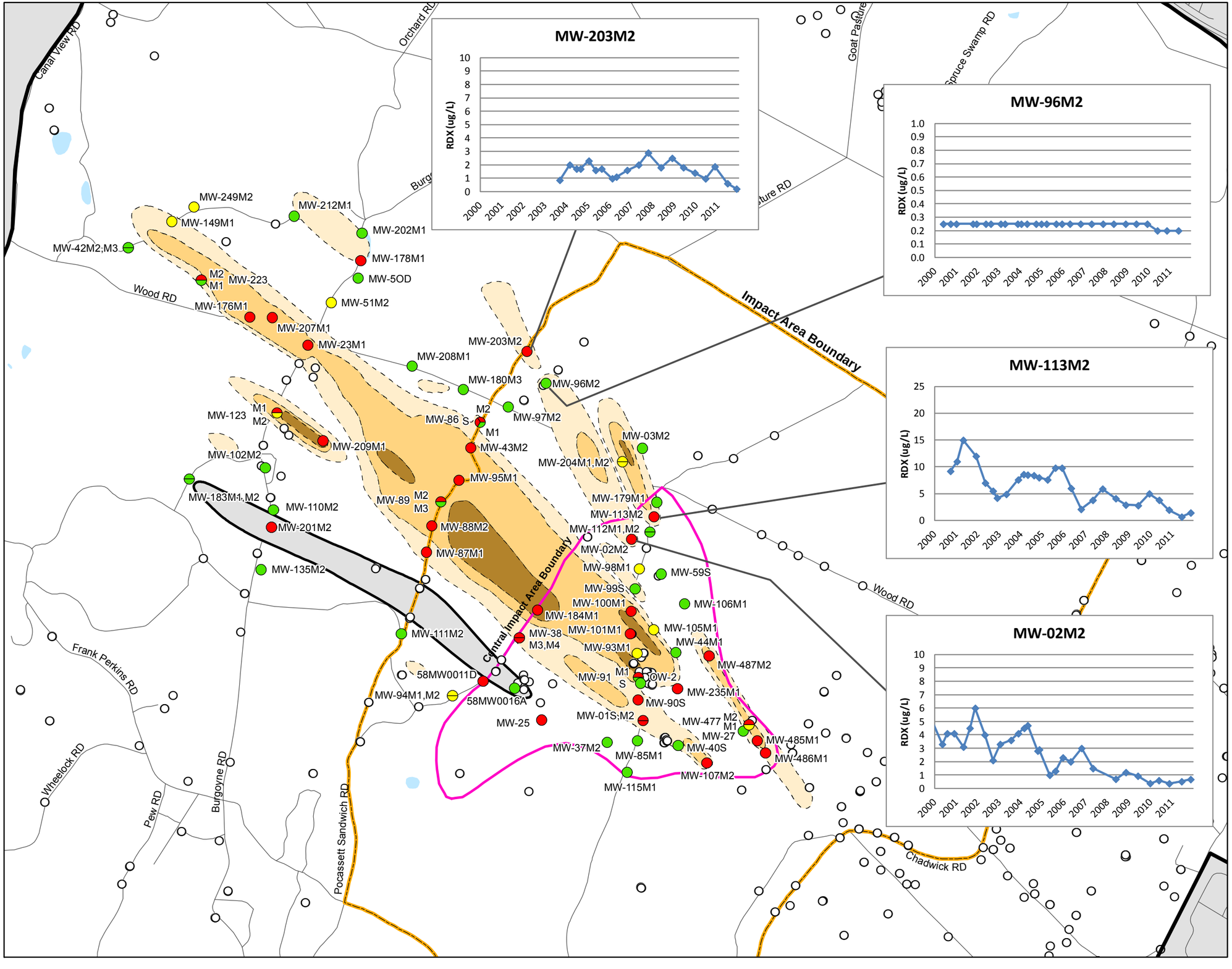





# Impact Area Groundwater Study Program

## LEGEND

**Monitoring Wells**

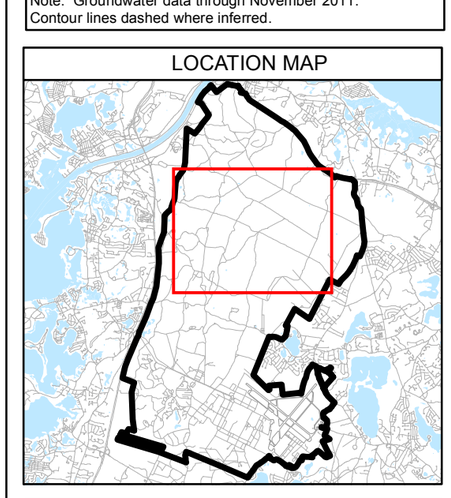
- Well Not Included in RDX Monitoring Plan
- No Detection
- Detection at or below 0.6 µg/L
- Detection above 0.6 µg/L
- Indicates different detections in different well screens

**RDX in Groundwater**
(Contours Dashed Where Inferred)

- 0.6 to 2 µg/L
- 2 to 6 µg/L
- Greater than 6 µg/L
- MMR Boundary
- Impact Area Boundary
- Central Impact Area Boundary
- CS-19

Note: Groundwater data through November 2011.
Contour lines dashed where inferred.

## LOCATION MAP



## NOTES & SOURCES

Basemap data from US Geological Survey 7 1/2 minute Topographic Maps. Source: MassGIS

## TITLE

Central Impact Area
Northeast Plumes
RDX Trend Plots

0 1,500 Feet

N

US Army Corps of Engineers
New England District

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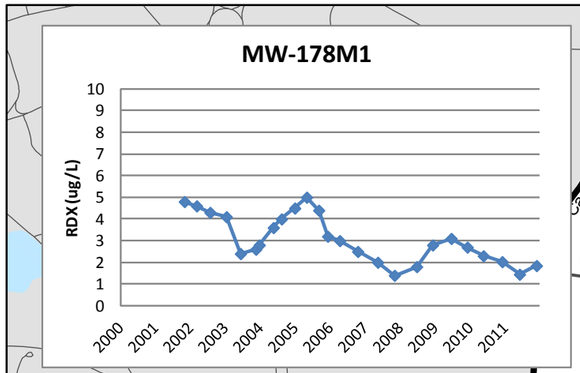
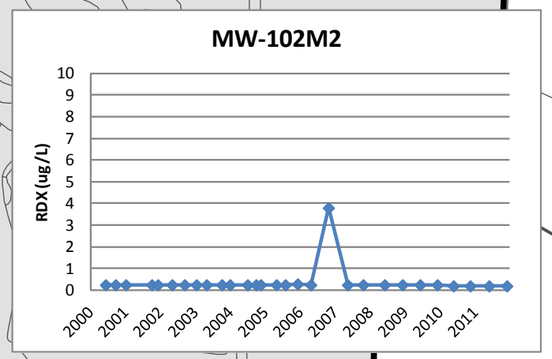
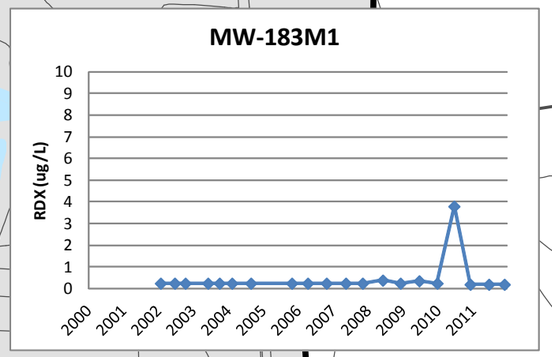
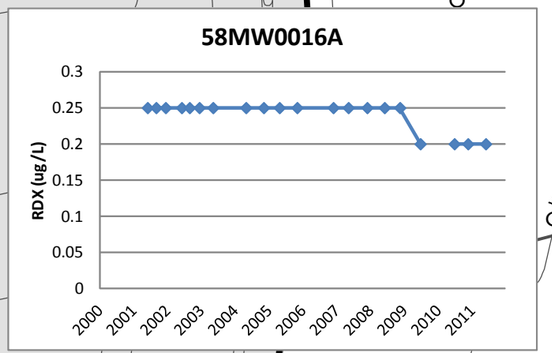
October 18, 2012 DWN: MTW CHKD: KJH

FIGURE 3-6







# Impact Area Groundwater Study Program

## LEGEND

**Monitoring Wells**

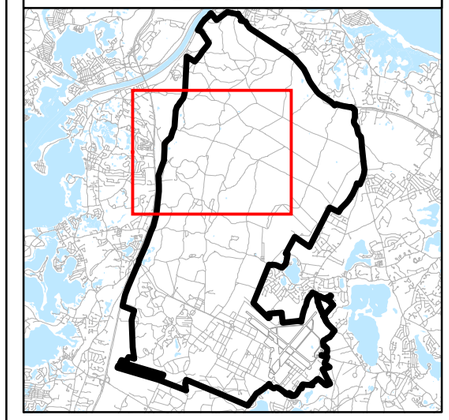
- Well Not Included in RDX Monitoring Plan
- No Detection
- Detection at or below 0.6 µg/L
- Detection above 0.6 µg/L
- Indicates different detections in different well screens

**RDX in Groundwater**
(Contours Dashed Where Inferred)

- 0.6 to 2 µg/L
- 2 to 6 µg/L
- Greater than 6 µg/L
- MMR Boundary
- Impact Area Boundary
- Central Impact Area Boundary
- CS-19

Note: Groundwater data through November 2011.
Contour lines dashed where inferred.

## LOCATION MAP



## NOTES & SOURCES

Basemap data from US Geological Survey 7 1/2 minute Topographic Maps. Source: MassGIS

## TITLE

Central Impact Area
CS-19 Plume, Northeast
and Southwest Plumelets
RDX Trend Plots

0 1,500 Feet

N

US Army Corps of Engineers
New England District

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October 18, 2012 DWN: MTW CHKD: KJH

FIGURE
3-7

# Impact Area Groundwater Study Program

## LEGEND

**Monitoring Wells**

- Well Included in Perchlorate Monitoring Plan
- Well Not Included in Perchlorate Monitoring Plan

**Perchlorate in Groundwater**
(Contours Dashed Where Inferred)

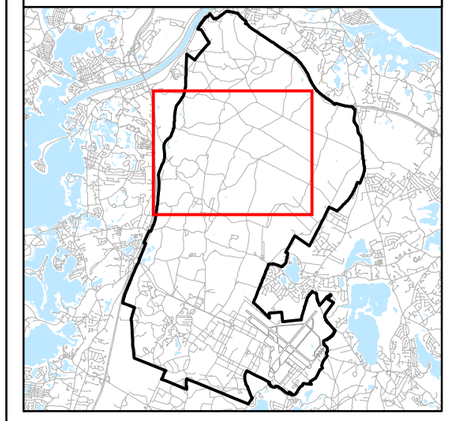
- 2 to 15 µg/L
- MMR Boundary
- Impact Area Boundary
- Central Impact Area Boundary

**Groundwater Elevation Contours**
(in feet above NGVD)

- Water Level Contours - MMR10

Note: Groundwater data through November 2011.
Contour lines dashed where inferred.

## LOCATION MAP



## NOTES & SOURCES

Basemap data from US Geological Survey 7 1/2 minute Topographic Maps. Source: MassGIS

## TITLE

Central Impact Area
Monitoring Wells in
Perchlorate Monitoring Program

0 1,500 Feet

N

US Army Corps of Engineers
New England District

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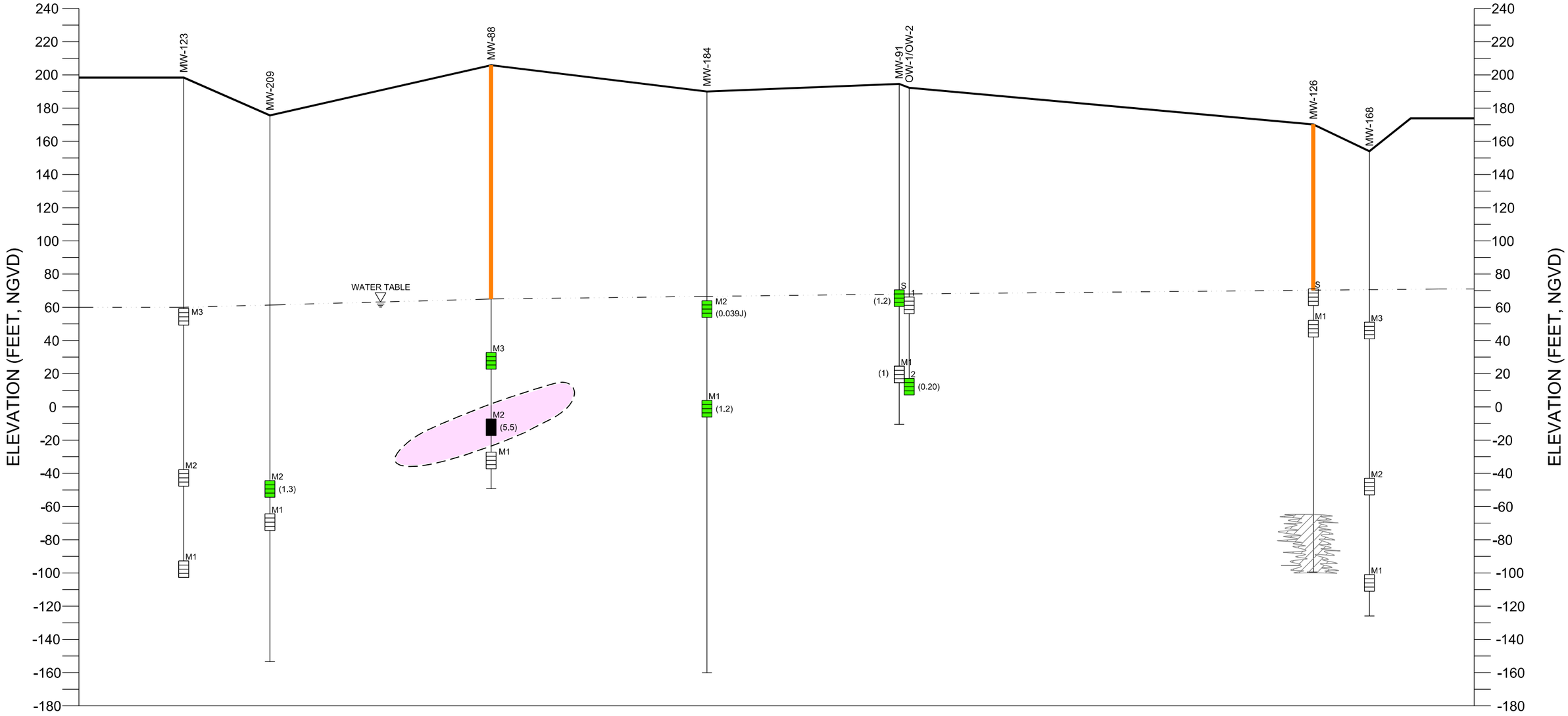
October 18, 2012 DWN: MTW CHKD: KJH

FIGURE 3-8

# CROSS SECTION C-C'

(NW)
B

(SE)
B'




NOTES:

1. FOR ORIENTATION OF CROSS SECTION, SEE FIGURE A.
2. MOST RECENT VALIDATED DATA AS OF MARCH 12, 2007.
3. MAXIMUM HISTORICAL CONCENTRATION USED TO DELINEATE EXTENT OF PERCHLORATE IN GROUNDWATER.
4. CONCENTRATIONS IN PPB
5. J = ESTIMATED CONCENTRATION
6. ND = NON-DETECT
7. NGVD = NATIONAL GEODETIC VERTICAL DATUM
8. * = UNVALIDATED DATA

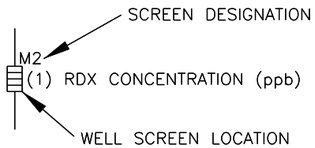
GEOLOGIC UNITS

- SAND
- SILT
- CLAY
- BEDROCK

LEGEND

PERCHLORATE CONCENTRATIONS

- Not Sampled
- ND OR < 2 ppb
- >2 ppb
- 4 to less than 18 ppb
- Impact Area Boundary




HORIZONTAL SCALE:1"= 1000'

0' 500' 1000'

0' 30 60'

VERTICAL SCALE: 1" = 60'

# FIGURE 3-9

## CROSS SECTION C-C'

PERCHLORATE DISTRIBUTION IN GROUNDWATER

DRAFT FEASIBILITY STUDY

IMPACT AREA GROUNDWATER OPERABLE UNIT

REVISIONS

AMEC Project No: 2-7622-5018

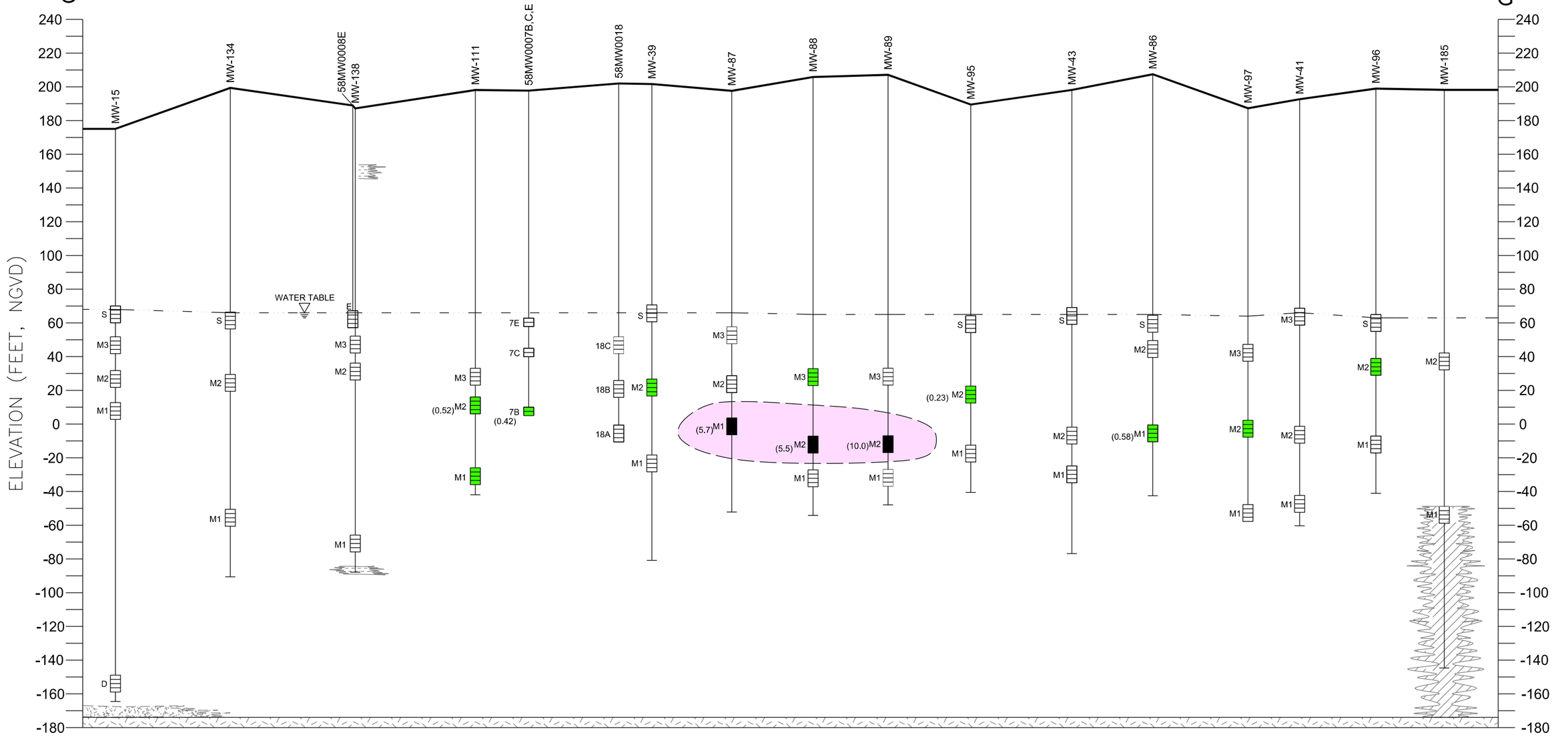
| DRAWN BY: | DATE: | DRAWING NO. |
|---|---|---|
| RWB | 12/18/12 | SEC C-C'_2011 |

CHECKED BY: CJG

# CROSS SECTION G-G'

(SOUTH) G — (NORTH) G'

ELEVATION (FEET, NGVD)




NOTES:

1. FOR ORIENTATION OF CROSS SECTION.
2. MOST RECENT VALIDATED DATA AS OF DECEMBER 6, 2012.
3. CONCENTRATIONS IN PPB
4. J = ESTIMATED CONCENTRATION
5. ND = NON-DETECT
6. NGVD = NATIONAL GEODETIC VERTICAL DATUM
7. * = UNVALIDATED DATA
8. REVISED FROM CROSS-SECTION DEVELOPED BY AMEC IN OCTOBER 2007 AND PRESENTED IN THE JANURARY 2008 CIA REPORT - "DRAFT UXO/SOURCE INVESTIGATION FOR THE CENTRAL IMPACT AREA".

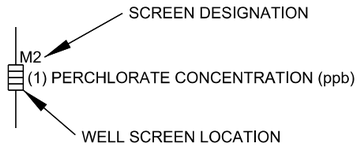
GEOLOGIC UNITS

- SAND
- SILT
- CLAY
- BEDROCK

LEGEND

PERCHLORATE CONCENTRATIONS

- Not Sampled
- ND OR < 2 ppb
- >2 ppb
- >2 ppb and < 15 ppb




HORIZONTAL SCALE:1"= 1000'

0' 500' 1000'

0' 30 60'

VERTICAL SCALE: 1" = 60'

# FIGURE 3–10

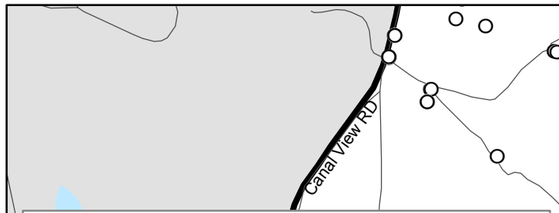
## CROSS SECTION G–G'

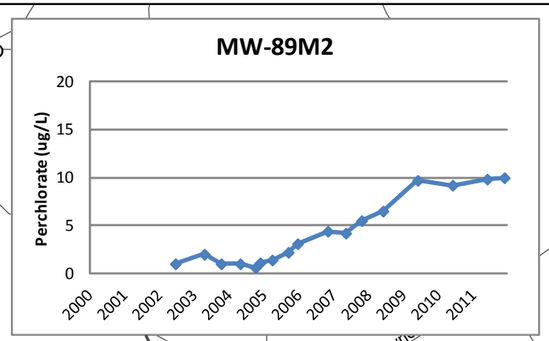
PERCHLORATE DISTRIBUTION IN GROUNDWATER

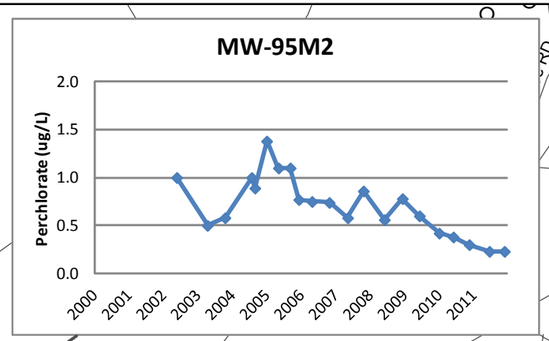
DRAFT FEASIBILITY STUDY

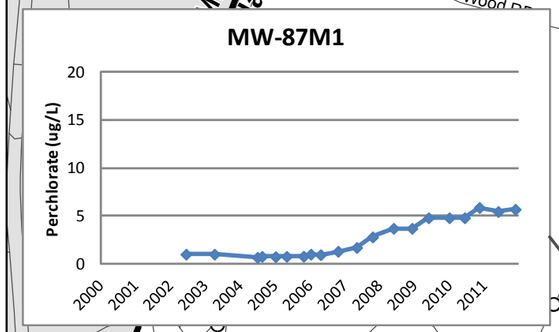
IMPACT AREA GROUNDWATER OPERABLE UNIT

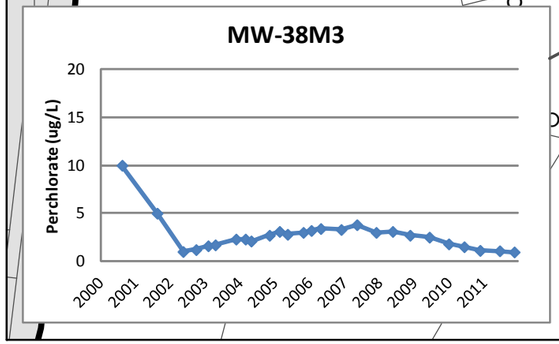
| REVISIONS | AMEC Project No: 2–7622–5018 | | |
|---|---|---|---|
| | DRAWN BY: RWB | DATE: 12/18/12 | DRAWING NO. |
| | CHECKED BY: CA | | SEC G-G'_2011.dgn |






# Impact Area Groundwater Study Program

## LEGEND

**Monitoring Wells**

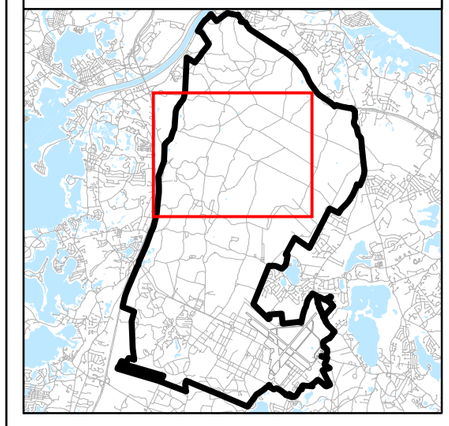
- Well Not Included in Perchlorate Monitoring Plan
- No Detection
- Detection at or below 2 □g/L
- Detection above 2 □g/L
- Indicates different detections in different well screens

**Perchlorate in Groundwater**
(Contours Dashed Where Inferred)

- 2 to 15 □g/L
- MMR Boundary
- Impact Area Boundary
- Central Impact Area Boundary

Note: Plume shell illustrated is representative of widest observed at each transect cross-section Groundwater data through November 2011 Contour lines dashed where inferred.

## LOCATION MAP



## NOTES & SOURCES

Basemap data from US Geological Survey 7 1/2 minute Topographic Maps. Source: MassGIS

## TITLE

Central Impact Area
Perchlorate Trend Plots

0 1,500 Feet

US Army Corps of Engineers
New England District

M:\MMR\2012\CIA\AnnRpt\Figures\Fig3-17_101812.pdf
M:\MMR\2012\CIA\AnnRpt\MXDs\Fig3-17_101812.mxd
October 18, 2012 DWN: MTW CHKD: KJH

FIGURE
3-11

# Impact Area Groundwater Study Program

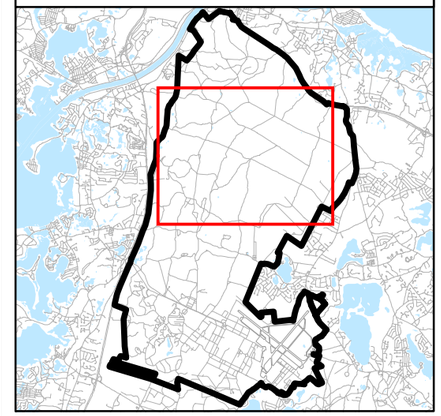
## LEGEND

**Monitoring Wells**
- ● Well Included in RDX Monitoring Plan
- ○ Well Not Included in RDX Monitoring Plan

**RDX in Groundwater**
(Contours Dashed Where Inferred)
- 0.6 to 2 µg/L
- 2 to 6 µg/L
- Greater than 6 µg/L
- MMR Boundary
- Impact Area Boundary
- Central Impact Area Boundary
- CS-19

Note: Groundwater data through November 2011.
Contour lines dashed where inferred.

## LOCATION MAP



## NOTES & SOURCES

Basemap data from US Geological Survey 7 1/2 minute Topographic Maps. Source: MassGIS

## TITLE

Central Impact Area
Proposed RDX
Sampling Locations

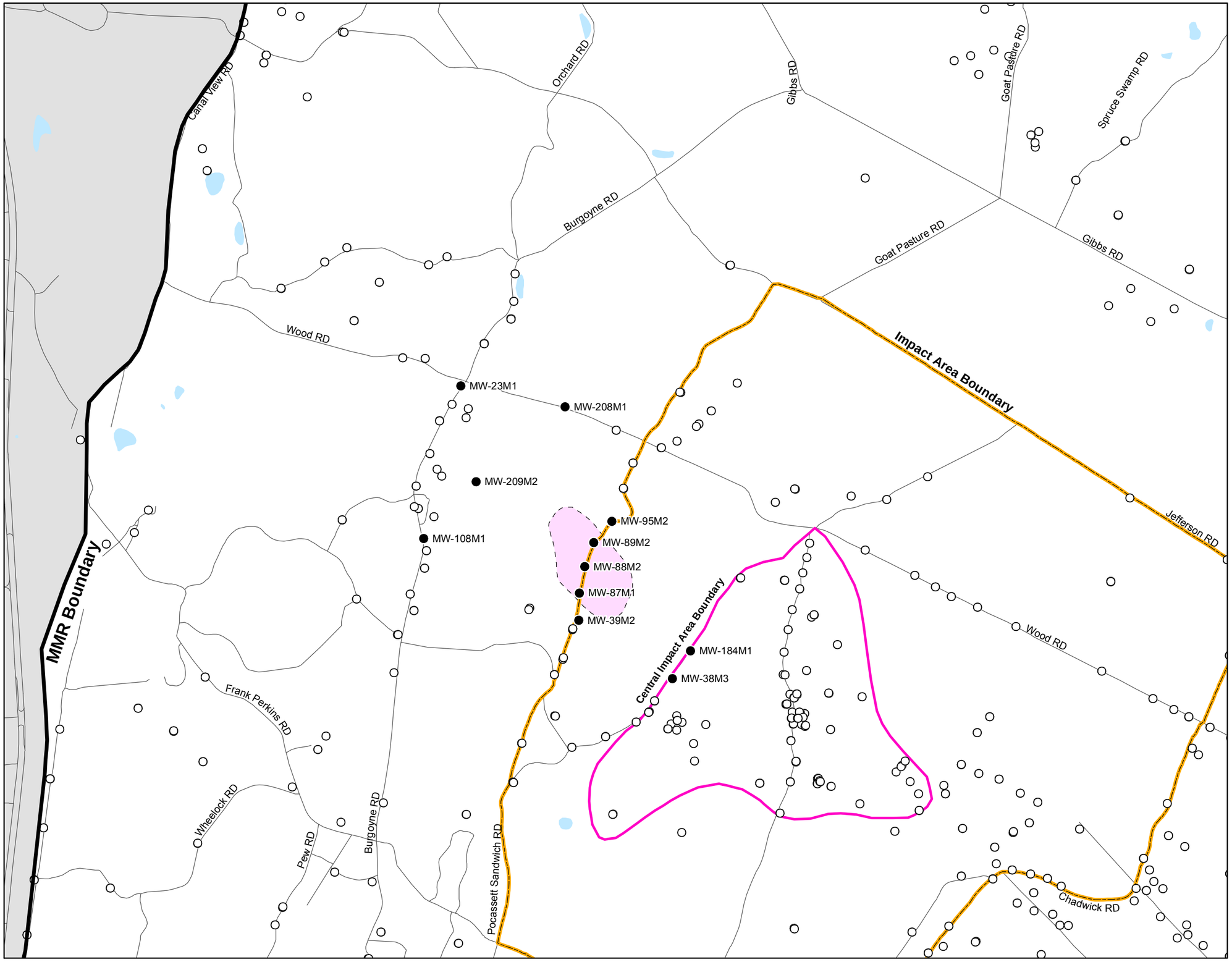
0 1,500 Feet

N

US Army Corps of Engineers
New England District

M:\MMR\2012\CIA\AnnRpt\Figures\Fig4-1_121712.pdf
M:\MMR\2012\CIA\AnnRpt\MXDs\Fig4-1_060512.mxd
December 17, 2012 DWN: MTW CHKD: KJH

FIGURE
4-1




# Impact Area Groundwater Study Program

## LEGEND

**Monitoring Wells**

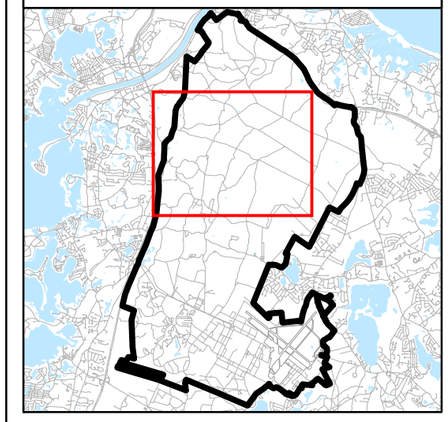
- ● Well Included in Perchlorate Monitoring Plan
- ○ Well Not Included in Perchlorate Monitoring Plan

**Perchlorate in Groundwater**
(Contours Dashed Where Inferred)

- 2 to 15 µg/L
- MMR Boundary
- Impact Area Boundary
- Central Impact Area Boundary

Note: Groundwater data through November 2011.
Contour lines dashed where inferred.

## LOCATION MAP



## NOTES & SOURCES

Basemap data from US Geological Survey 7 1/2 minute Topographic Maps. Source: MassGIS

## TITLE

Central Impact Area
Proposed Perchlorate
Sampling Locations

0 1,500 Feet

N

US Army Corps of Engineers
New England District

M:\MMR\2012\CIA\AnnRpt\Figures\Fig4-2_101812.pdf
M:\MMR\2012\CIA\AnnRpt\MXDs\Fig4-2_060512.mxd
October 18, 2012 DWN: MTW CHKD: KJH

FIGURE
4-2

# TABLES

**Table 2-1**
**Chemical Monitoring Network - Sample Parameters and Frequency**
**Central Impact Area**

| Well | Northing (m) | Easting (m) | Surface Elevation (ft msl) | Top of Screen (ft msl) | Bottom of Screen (ft msl) | Current Explosives Frequency (a. b) | Current Perchlorate Frequency (a, b) |
|---|---|---|---|---|---|---|---|
| 58MW0007B | 4,619,275.56 | 370,939.74 | 197.70 | 9.70 | 4.70 | N/A | S |
| 58MW0009C | 4,619,011.36 | 371,358.25 | 189.33 | 21.30 | 16.30 | N/A | S |
| 58MW0011D | 4,618,961.77 | 371,294.07 | 191.23 | 15.80 | 10.80 | A | N/A |
| 58MW0015A | 4,618,969.06 | 371,494.06 | 184.81 | 23.80 | 14.80 | N/A | S |
| 58MW0016A | 4,618,927.06 | 371,447.84 | 185.47 | 9.50 | 0.50 | S | N/A |
| 58MW0017B | 4,619,065.24 | 371,384.76 | 187.86 | 22.90 | 12.90 | N/A | A |
| MW-01M2 | 4,618,769.02 | 372,076.10 | 187.03 | 27.00 | 22.00 | S | N/A |
| MW-01S | 4,618,768.97 | 372,075.46 | 187.03 | 73.00 | 63.00 | A | N/A |
| MW-02M1 | 4,619,653.82 | 372,018.93 | 207.38 | -4.60 | -9.60 | N/A | S |
| MW-02M2 | 4,619,654.40 | 372,018.98 | 207.38 | 37.40 | 32.40 | S | A |
| MW-03M2 | 4,620,099.04 | 372,072.10 | 114.55 | -65.50 | -70.50 | A | A |
| MW-100M1 | 4,619,302.67 | 372,017.34 | 200.92 | 21.90 | 11.90 | S | S |
| MW-100M2 | 4,619,302.06 | 372,017.32 | 200.92 | 36.90 | 26.90 | N/A | S |
| MW-101M1 | 4,619,193.30 | 372,012.75 | 199.49 | 41.50 | 31.50 | A | N/A |
| MW-101S | 4,619,191.46 | 372,022.03 | 199.49 | 68.50 | 58.50 | N/A | A |
| MW-102M2 | 4,620,003.67 | 370,230.25 | 203.66 | -33.30 | -43.30 | S | S |
| MW-105M1 | 4,619,213.26 | 372,127.04 | 196.73 | -8.30 | -18.30 | S | N/A |
| MW-106M1 | 4,619,339.34 | 372,278.28 | 202.09 | 31.60 | 21.60 | S | A |
| MW-107M1 | 4,618,561.51 | 372,386.70 | 189.78 | 34.80 | 24.80 | N/A | A |
| MW-107M2 | 4,618,561.69 | 372,386.76 | 189.78 | 64.80 | 54.80 | A | A |
| MW-108D | 4,619,858.11 | 370,256.89 | 225.31 | -91.70 | -101.70 | N/A | S |
| MW-108M1 | 4,619,857.50 | 370,256.87 | 225.15 | -71.90 | -81.90 | N/A | S |
| MW-108M4 | 4,619,858.10 | 370,257.19 | 225.31 | -14.70 | -24.70 | N/A | S |
| MW-110M2 | 4,619,797.79 | 370,270.01 | 234.25 | -14.30 | -24.30 | S | N/A |
| MW-111M1 | 4,619,193.18 | 370,895.08 | 198.00 | -26.00 | -36.00 | N/A | S |
| MW-111M2 | 4,619,193.18 | 370,895.08 | 198.00 | 16.00 | 6.00 | A | A |
| MW-112M1 | 4,619,690.01 | 372,109.26 | 206.15 | 11.20 | 1.20 | A | N/A |
| MW-112M2 | 4,619,689.40 | 372,109.25 | 206.15 | 41.20 | 31.20 | S | N/A |
| MW-113M2 | 4,619,764.47 | 372,129.07 | 208.21 | 18.20 | 8.20 | S | N/A |
| MW-115M1 | 4,618,516.06 | 371,997.16 | 185.60 | 47.60 | 37.60 | A | N/A |
| MW-123M1 | 4,620,272.18 | 370,287.40 | 198.33 | -92.70 | -102.70 | S | N/A |
| MW-123M2 | 4,620,271.57 | 370,287.38 | 198.33 | -37.70 | -47.70 | S | N/A |
| MW-135M2 | 4,619,506.21 | 370,209.44 | 248.21 | -31.80 | -41.80 | A | N/A |
| MW-141M1 | 4,619,664.54 | 371,804.32 | 194.98 | 5.00 | -5.00 | N/A | S |
| MW-141M2 | 4,619,664.84 | 371,804.33 | 194.98 | 33.00 | 23.00 | N/A | S |
| MW-149M1 | 4,621,207.15 | 369,773.75 | 155.12 | -82.40 | -92.40 | A | N/A |
| MW-176M1 | 4,620,739.68 | 370,155.27 | 165.62 | -104.40 | -114.40 | S | N/A |
| MW-178M1 | 4,621,016.10 | 370,696.58 | 196.26 | -60.70 | -70.70 | S | N/A |
| MW-179M1 | 4,619,835.15 | 372,142.12 | 206.06 | 19.10 | 9.10 | A | S |
| MW-180M3 | 4,620,386.18 | 371,197.72 | 218.25 | 47.30 | 37.30 | S | N/A |
| MW-183M1 | 4,619,949.04 | 369,859.58 | 237.41 | -48.60 | -58.60 | S | N/A |
| MW-183M2 | 4,619,948.02 | 369,858.91 | 237.41 | -32.60 | -42.60 | S | N/A |
| MW-184M1 | 4,619,309.33 | 371,560.47 | 189.96 | 4.00 | -6.00 | S | S |

**Table 2-1**
**Chemical Monitoring Network - Sample Parameters and Frequency**
**Central Impact Area**

| Well | Northing (m) | Easting (m) | Surface Elevation (ft msl) | Top of Screen (ft msl) | Bottom of Screen (ft msl) | Current Explosives Frequency (a. b) | Current Perchlorate Frequency (a, b) |
|---|---|---|---|---|---|---|---|
| MW-184M2 | 4,619,309.57 | 371,560.60 | 189.96 | 64.00 | 54.00 | N/A | S |
| MW-201M2 | 4,619,713.24 | 370,260.99 | 253.56 | -32.40 | -42.40 | S | N/A |
| MW-202M1 | 4,621,149.78 | 370,702.76 | 198.13 | -65.90 | -75.90 | A | N/A |
| MW-203M2 | 4,620,572.78 | 371,508.46 | 204.37 | 28.40 | 18.40 | S | N/A |
| MW-204M1 | 4,620,033.59 | 371,974.40 | 119.78 | -21.20 | -31.20 | S | N/A |
| MW-204M2 | 4,620,033.71 | 371,974.53 | 119.78 | 43.80 | 33.80 | S | N/A |
| MW-207M1 | 4,620,737.46 | 370,264.93 | 197.74 | -56.30 | -66.30 | S | N/A |
| MW-208M1 | 4,620,500.78 | 370,947.53 | 195.65 | 0.70 | -9.30 | S | S |
| MW-209M1 | 4,620,135.49 | 370,512.13 | 175.59 | -64.40 | -74.40 | S | N/A |
| MW-209M2 | 4,620,135.61 | 370,512.23 | 175.59 | -44.40 | -54.40 | N/A | S |
| MW-212M1 | 4,621,233.03 | 370,371.44 | 258.00 | -75.00 | -85.00 | S | N/A |
| MW-223M1 | 4,620,920.65 | 369,917.71 | 141.68 | -69.30 | -79.30 | S | S |
| MW-223M2 | 4,620,920.83 | 369,917.62 | 141.68 | -43.30 | -53.30 | S | N/A |
| MW-235M1 | 4,618,924.39 | 372,243.62 | 192.75 | 38.80 | 28.80 | S | N/A |
| MW-23M1 | 4,620,602.72 | 370,438.03 | 183.28 | -41.70 | -51.70 | S | S |
| MW-249M2 | 4,621,278.00 | 369,881.66 | 186.92 | 12.90 | 2.90 | S | N/A |
| MW-25 | 4,618,771.45 | 371,580.33 | 179.95 | 72.00 | 62.00 | S | N/A |
| MW-27 | 4,618,717.93 | 372,564.80 | 190.35 | 73.40 | 63.40 | A | N/A |
| MW-37M2 | 4,618,662.28 | 371,899.80 | 189.95 | 45.00 | 35.00 | A | N/A |
| MW-38M3 | 4,619,173.66 | 371,470.76 | 187.12 | 17.10 | 7.10 | S | S |
| MW-38M4 | 4,619,172.62 | 371,471.73 | 187.12 | 55.10 | 45.10 | S | N/A |
| MW-39M2 | 4,619,457.77 | 371,014.20 | 201.63 | 26.60 | 16.60 | N/A | A |
| MW-40S | 4,618,646.98 | 372,246.91 | 189.34 | 73.80 | 63.30 | A | N/A |
| MW-42M2 | 4,621,078.99 | 369,561.17 | 120.24 | -65.60 | -75.80 | S | N/A |
| MW-42M3 | 4,621,080.02 | 369,560.20 | 120.24 | -45.60 | -55.80 | S | N/A |
| MW-43M2 | 4,620,101.51 | 371,233.87 | 198.11 | -1.90 | -11.90 | S | N/A |
| MW-44M1 | 4,619,101.84 | 372,235.68 | 197.14 | 15.10 | 5.10 | A | A |
| MW-477M1 | 4,618,748.75 | 372,592.62 | 192.29 | 4.80 | -5.20 | A | A |
| MW-477M2 | 4,618,743.50 | 372,588.22 | 192.18 | 46.60 | 36.60 | A | A |
| MW-485M1 | 4,618,669.87 | 372,632.70 | 191.03 | 65.70 | 55.70 | A | N/A |
| MW-486M1 | 4,618,610.49 | 372,673.31 | 185.45 | -0.30 | -10.30 | A | N/A |
| MW-487M2 | 4,619,084.70 | 372,397.53 | 197.02 | 1.20 | -8.80 | A | A |
| MW-50D | 4,620,930.35 | 370,683.41 | 177.72 | -59.30 | -69.30 | A | N/A |
| MW-50M2 | 4,620,931.05 | 370,683.43 | 177.72 | 0.70 | -9.30 | N/A | S |
| MW-51M2 | 4,620,810.59 | 370,552.94 | 205.33 | 2.30 | -7.70 | A | N/A |
| MW-59S | 4,619,485.08 | 372,163.75 | 202.50 | 74.50 | 64.50 | A | N/A |
| MW-85M1 | 4,618,669.88 | 372,047.83 | 186.49 | 49.00 | 39.00 | S | A |
| MW-86M1 | 4,620,226.62 | 371,280.05 | 207.45 | -0.60 | -10.60 | N/A | S |
| MW-86M2 | 4,620,226.01 | 371,280.03 | 207.45 | 49.50 | 39.50 | S | N/A |
| MW-86S | 4,620,226.32 | 371,280.03 | 207.45 | 64.50 | 54.50 | S | N/A |
| MW-87M1 | 4,619,591.51 | 371,017.76 | 197.60 | 3.60 | -6.40 | S | S |
| MW-88M2 | 4,619,720.54 | 371,043.41 | 205.80 | -7.20 | -17.20 | S | S |
| MW-88M3 | 4,619,720.84 | 371,043.73 | 205.80 | 32.80 | 22.80 | N/A | S |

**Table 2-1**
**Chemical Monitoring Network - Sample Parameters and Frequency**
**Central Impact Area**

| Well | Northing (m) | Easting (m) | Surface Elevation (ft msl) | Top of Screen (ft msl) | Bottom of Screen (ft msl) | Current Explosives Frequency (a. b) | Current Perchlorate Frequency (a, b) |
|---|---|---|---|---|---|---|---|
| MW-89M2 | 4,619,837.74 | 371,087.19 | 207.07 | -6.90 | -16.90 | S | A |
| MW-89M3 | 4,619,837.84 | 371,087.67 | 207.07 | 33.10 | 23.10 | A | N/A |
| MW-90S | 4,618,870.23 | 372,051.32 | 187.46 | 69.50 | 59.50 | A | A |
| MW-91M1 | 4,618,980.51 | 372,052.90 | 193.78 | 23.80 | 13.80 | S | N/A |
| MW-91S | 4,618,979.76 | 372,052.65 | 193.78 | 69.80 | 59.80 | A | A |
| MW-93M1 | 4,619,097.10 | 372,046.56 | 197.21 | 12.20 | 2.20 | A | S |
| MW-94M1 | 4,618,890.69 | 371,144.93 | 190.94 | 30.90 | 20.90 | A | N/A |
| MW-94M2 | 4,618,889.95 | 371,145.05 | 190.94 | 50.90 | 40.90 | A | N/A |
| MW-95M1 | 4,619,942.66 | 371,175.61 | 189.45 | -12.60 | -22.60 | S | N/A |
| MW-95M2 | 4,619,942.05 | 371,175.60 | 189.45 | 22.50 | 12.50 | N/A | S |
| MW-96M2 | 4,620,416.65 | 371,601.34 | 198.91 | 38.90 | 28.90 | A | S |
| MW-97M2 | 4,620,300.92 | 371,417.12 | 187.22 | 2.20 | -7.80 | S | N/A |
| MW-98M1 | 4,619,510.25 | 372,057.29 | 205.36 | 41.40 | 31.40 | A | A |
| MW-99M1 | 4,619,412.57 | 372,036.36 | 202.19 | 7.20 | -2.80 | N/A | N/A |
| MW-99S | 4,619,411.96 | 372,036.34 | 202.19 | 69.20 | 59.20 | A | A |
| OW-2 | 4,618,951.54 | 372,062.80 | 192.23 | 17.20 | 7.20 | S | S |

Notes:
ft = feet
m = meters
msl = mean sea level
N/A not applicable

(a)
A = annually
S = semi-annually

(b)
Explosives = EPA Method SW846-8330
Perchlorate = EPA Method SW846-6850

**Table 3-1**
**Summary of Groundwater Monitoring Results**
**2011 Central Impact Area**

| Well Name | Sample Type | Northing (meters) | Easting (meters) | Perchlorate (µg/L) | RDX (µg/L) | HMX (µg/L) | TNT (µg/L) | 2A-DNT (µg/L) | 4A-DNT (µg/L) | Surface Elevation (ft msl) | Top of Screen (ft msl) | Top of Screen (ft BWT) | Bottom of Screen (ft msl) | Bottom of Screen (ft BWT) | Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | MMCL MCP GW-1 2 µg/L | USEPA Risk Based 0.61 µg/L | USEPA Health Advisory 200 µg/L | USEPA Risk Based 30 µg/L | USEPA Risk Based 30 µg/L | USEPA Risk Based 30 µg/L | | | | | | |
| 58MW0007B | N | 4619275.56 | 370939.74 | 0.5 | N/A | N/A | N/A | N/A | N/A | 197.70 | 9.7 | 54.6 | 4.7 | 59.6 | 07-Jun-11 |
| 58MW0007B | N | 4619275.56 | 370939.74 | 0.42 | N/A | N/A | N/A | N/A | N/A | 197.70 | 9.7 | 54.6 | 4.7 | 59.6 | 29-Nov-11 |
| 58MW0009C | N | 4619011.36 | 371358.25 | 0.72 | N/A | N/A | N/A | N/A | N/A | 189.33 | 21.3 | 46.1 | 16.3 | 51.1 | 03-Jun-11 |
| 58MW0009C | N | 4619011.36 | 371358.25 | 0.49 | N/A | N/A | N/A | N/A | N/A | 189.33 | 21.3 | 46.0 | 16.3 | 51.0 | 29-Nov-11 |
| 58MW0011D | N | 4618961.77 | 371294.07 | N/A | **2.49** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 191.23 | 15.8 | 50.7 | 10.8 | 55.7 | 07-Jun-11 |
| 58MW0015A | N | 4618969.06 | 371494.06 | 0.26 | N/A | N/A | N/A | N/A | N/A | 184.81 | 23.8 | 44.4 | 14.8 | 53.4 | 03-Jun-11 |
| 58MW0015A | N | 4618969.06 | 371494.06 | 0.21 | N/A | N/A | N/A | N/A | N/A | 184.81 | 23.8 | 44.4 | 14.8 | 53.4 | 29-Nov-11 |
| 58MW0016A | N | 4618927.06 | 371447.84 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 185.47 | 9.5 | 58.6 | 0.5 | 67.6 | 03-Jun-11 |
| 58MW0016A | N | 4618927.06 | 371447.84 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 185.47 | 9.5 | 58.6 | 0.5 | 67.6 | 29-Nov-11 |
| 58MW0017B | N | 4619065.24 | 371384.76 | 1.04 | N/A | N/A | N/A | N/A | N/A | 187.86 | 22.9 | 44.6 | 12.9 | 54.6 | 07-Jun-11 |
| MW-01M2 | N | 4618769.02 | 372076.10 | N/A | **0.81** | 0.29 | 0.2 U | 0.2 U | 0.2 U | 187.03 | 27.0 | 44.8 | 22.0 | 49.8 | 31-May-11 |
| MW-01M2 | N | 4618769.02 | 372076.10 | N/A | **1.62** | 0.22 | 0.2 U | 0.2 U | 0.2 U | 187.03 | 27.0 | 45.1 | 22.0 | 50.1 | 18-Nov-11 |
| MW-01S | N | 4618768.97 | 372075.46 | N/A | **1.46** | 0.25 | 0.2 U | 0.2 U | 0.2 U | 187.03 | 73.0 | -1.1 | 63.0 | 8.9 | 09-Jun-11 |
| MW-02M1 | N | 4619653.82 | 372018.93 | 0.38 | N/A | N/A | N/A | N/A | N/A | 207.38 | -4.6 | 74.7 | -9.6 | 79.7 | 16-Jun-11 |
| MW-02M1 | N | 4619653.82 | 372018.93 | 0.34 | N/A | N/A | N/A | N/A | N/A | 207.38 | -4.6 | 74.8 | -9.6 | 79.8 | 16-Nov-11 |
| MW-02M2 | N | 4619654.40 | 372018.98 | 0.2 U | 0.52 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 207.38 | 37.4 | 32.8 | 32.4 | 37.8 | 16-Jun-11 |
| MW-02M2 | N | 4619654.40 | 372018.98 | N/A | **0.68** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 207.38 | 37.4 | 32.9 | 32.4 | 37.9 | 16-Nov-11 |
| MW-03M2 | N | 4620099.04 | 372072.10 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 114.55 | -65.5 | 134.6 | -70.5 | 139.6 | 16-Jun-11 |
| MW-100M1 | N | 4619302.67 | 372017.34 | 0.2 U | **2.12** | 0.29 | 0.2 U | 0.2 U | 0.2 U | 200.92 | 21.9 | 49.3 | 11.9 | 59.3 | 14-Jun-11 |
| MW-100M1 | N | 4619302.67 | 372017.34 | 0.13 J | **2.04** | 0.31 | 0.2 U | 0.2 U | 0.2 U | 200.92 | 21.9 | 49.4 | 11.9 | 59.4 | 15-Nov-11 |
| MW-100M2 | N | 4619302.06 | 372017.32 | 0.2 U | N/A | N/A | N/A | N/A | N/A | 200.92 | 36.9 | 34.3 | 26.9 | 44.3 | 14-Jun-11 |
| MW-100M2 | N | 4619302.06 | 372017.32 | 0.096 J | N/A | N/A | N/A | N/A | N/A | 200.92 | 36.9 | 34.4 | 26.9 | 44.4 | 16-Nov-11 |
| MW-101M1 | N | 4619193.30 | 372012.75 | N/A | **2.87** | 0.27 | 0.2 U | 0.2 U | 0.2 U | 199.49 | 41.5 | 30.0 | 31.5 | 40.0 | 09-Jun-11 |
| MW-101S | N | 4619191.46 | 372022.03 | 0.2 U | N/A | N/A | N/A | N/A | N/A | 199.49 | 68.5 | 3.0 | 58.5 | 13.0 | 09-Jun-11 |
| MW-102M2 | N | 4620003.67 | 370230.25 | 0.32 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 203.66 | -33.3 | 95.7 | -43.3 | 105.7 | 02-Jun-11 |
| MW-102M2 | N | 4620003.67 | 370230.25 | 0.41 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 203.66 | -33.3 | 95.2 | -43.3 | 105.2 | 06-Dec-11 |
| MW-105M1 | N | 4619213.26 | 372127.04 | N/A | 0.39 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 196.73 | -8.3 | 79.9 | -18.3 | 89.9 | 17-Jun-11 |
| MW-105M1 | N | 4619213.26 | 372127.04 | N/A | 0.56 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 196.73 | -8.3 | 80.0 | -18.3 | 90.0 | 16-Nov-11 |
| MW-106M1 | N | 4619339.34 | 372278.28 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 202.09 | 31.6 | N/A | 21.6 | N/A | 23-May-11 |
| MW-106M1 | N | 4619339.34 | 372278.28 | 0.064 J | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 202.09 | 31.6 | N/A | 21.6 | N/A | 05-Dec-11 |
| MW-107M1 | N | 4618561.51 | 372386.70 | 0.2 U | N/A | N/A | N/A | N/A | N/A | 189.78 | 34.8 | 38.0 | 24.8 | 48.0 | 10-Jun-11 |
| MW-107M2 | N | 4618561.69 | 372386.76 | 0.2 U | **2.46** | 0.24 | 0.2 U | 0.2 U | 0.2 U | 189.78 | 64.8 | 8.0 | 54.8 | 18.0 | 10-Jun-11 |
| MW-108D | N | 4619858.11 | 370256.89 | 0.2 U | N/A | N/A | N/A | N/A | N/A | 225.31 | -91.7 | 154.9 | -101.7 | 164.9 | 26-May-11 |
| MW-108D | N | 4619858.11 | 370256.89 | 0.2 U | N/A | N/A | N/A | N/A | N/A | 225.31 | -91.7 | 154.6 | -101.7 | 164.6 | 06-Dec-11 |
| MW-108M1 | N | 4619857.50 | 370256.87 | 0.23 | N/A | N/A | N/A | N/A | N/A | 225.15 | -71.9 | 135.1 | -81.9 | 145.1 | 26-May-11 |
| MW-108M1 | N | 4619857.50 | 370256.87 | 0.22 | N/A | N/A | N/A | N/A | N/A | 225.15 | -71.9 | 134.8 | -81.9 | 144.8 | 06-Dec-11 |
| MW-108M4 | N | 4619858.10 | 370257.19 | 0.2 U | N/A | N/A | N/A | N/A | N/A | 225.31 | -14.7 | 77.9 | -24.7 | 87.9 | 26-May-11 |
| MW-108M4 | N | 4619858.10 | 370257.19 | 0.16 J | N/A | N/A | N/A | N/A | N/A | 225.31 | -14.7 | 77.6 | -24.7 | 87.6 | 06-Dec-11 |
| MW-110M2 | N | 4619797.79 | 370270.01 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 234.25 | -14.3 | 77.5 | -24.3 | 87.5 | 26-May-11 |
| MW-110M2 | N | 4619797.79 | 370270.01 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 234.25 | -14.3 | 77.2 | -24.3 | 87.2 | 06-Dec-11 |
| MW-111M1 | N | 4619193.18 | 370895.08 | 0.2 U | N/A | N/A | N/A | N/A | N/A | 198.00 | -26.0 | 94.1 | -36.0 | 104.1 | 07-Jun-11 |
| MW-111M1 | N | 4619193.18 | 370895.08 | 0.2 U | N/A | N/A | N/A | N/A | N/A | 198.00 | -26.0 | 94.0 | -36.0 | 104.0 | 30-Nov-11 |
| MW-111M2 | N | 4619193.18 | 370895.08 | 0.52 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 198.00 | 16.0 | 52.4 | 6.0 | 62.4 | 07-Jun-11 |
| MW-112M1 | N | 4619690.01 | 372109.26 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 206.15 | 11.2 | 59.3 | 1.2 | 69.3 | 20-Jun-11 |

**Table 3-1**
**Summary of Groundwater Monitoring Results**
**2011 Central Impact Area**

| Well Name | Sample Type | Northing (meters) | Easting (meters) | Perchlorate (µg/L) | RDX (µg/L) | HMX (µg/L) | TNT (µg/L) | 2A-DNT (µg/L) | 4A-DNT (µg/L) | Surface Elevation (ft msl) | Top of Screen (ft msl) | Top of Screen (ft BWT) | Bottom of Screen (ft msl) | Bottom of Screen (ft BWT) | Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | MMCL MCP GW-1 2 µg/L | USEPA Risk Based 0.61 µg/L | USEPA Health Advisory 200 µg/L | USEPA Risk Based 30 µg/L | USEPA Risk Based 30 µg/L | USEPA Risk Based 30 µg/L | | | | | | |
| MW-112M2 | N | 4619689.40 | 372109.25 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 206.15 | 41.2 | 29.3 | 31.2 | 39.3 | 20-Jun-11 |
| MW-112M2 | N | 4619689.40 | 372109.25 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 206.15 | 41.2 | 29.3 | 31.2 | 39.3 | 16-Nov-11 |
| MW-113M2 | N | 4619764.47 | 372129.07 | N/A | **0.67** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 208.21 | 18.2 | 52.0 | 8.2 | 62.0 | 17-Jun-11 |
| MW-113M2 | N | 4619764.47 | 372129.07 | N/A | **1.44** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 208.21 | 18.2 | 52.0 | 8.2 | 62.0 | 17-Nov-11 |
| MW-115M1 | N | 4618516.06 | 371997.16 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 185.60 | 47.6 | 25.2 | 37.6 | 35.2 | 15-Jun-11 |
| MW-123M1 | N | 4620272.18 | 370287.40 | N/A | **3.44** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 198.33 | -92.7 | 154.4 | -102.7 | 164.4 | 22-Jun-11 |
| MW-123M1 | FD | 4620272.18 | 370287.40 | N/A | **5.48** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 198.33 | -92.7 | 153.7 | -102.7 | 163.7 | 05-Dec-11 |
| MW-123M1 | N | 4620272.18 | 370287.40 | N/A | **5.49** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 198.33 | -92.7 | 153.7 | -102.7 | 163.7 | 05-Dec-11 |
| MW-123M2 | N | 4620271.57 | 370287.38 | N/A | 0.28 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 198.33 | -37.7 | 99.4 | -47.7 | 109.4 | 22-Jun-11 |
| MW-123M2 | N | 4620271.57 | 370287.38 | N/A | 0.24 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 198.33 | -37.7 | 98.6 | -47.7 | 108.6 | 05-Dec-11 |
| MW-135M2 | N | 4619506.21 | 370209.44 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 248.21 | -31.8 | 96.1 | -41.8 | 106.1 | 14-Jun-11 |
| MW-141M1 | N | 4619664.54 | 371804.32 | 0.2 U | N/A | N/A | N/A | N/A | N/A | 194.98 | 5.0 | 65.2 | -5.0 | 75.2 | 22-Jun-11 |
| MW-141M1 | N | 4619664.54 | 371804.32 | 0.17 J | N/A | N/A | N/A | N/A | N/A | 194.98 | 5.0 | 65.2 | -5.0 | 75.2 | 17-Nov-11 |
| MW-141M2 | N | 4619664.84 | 371804.33 | 0.26 | N/A | N/A | N/A | N/A | N/A | 194.98 | 33.0 | 37.2 | 23.0 | 47.2 | 22-Jun-11 |
| MW-141M2 | N | 4619664.84 | 371804.33 | 0.23 | N/A | N/A | N/A | N/A | N/A | 194.98 | 33.0 | 37.2 | 23.0 | 47.2 | 17-Nov-11 |
| MW-149M1 | N | 4621207.15 | 369773.75 | N/A | 0.2 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 155.12 | -82.4 | 136.2 | -92.4 | 146.2 | 06-Jun-11 |
| MW-176M1 | FD | 4620739.68 | 370155.27 | N/A | **3.06** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 165.62 | -104.4 | 163.6 | -114.4 | 173.6 | 13-Jun-11 |
| MW-176M1 | N | 4620739.68 | 370155.27 | N/A | **3.19** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 165.62 | -104.4 | 163.6 | -114.4 | 173.6 | 13-Jun-11 |
| MW-176M1 | N | 4620739.68 | 370155.27 | N/A | **3.25** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 165.62 | -104.4 | 162.7 | -114.4 | 172.7 | 01-Dec-11 |
| MW-178M1 | N | 4621016.10 | 370696.58 | N/A | **1.45** | 0.13 J | 0.2 U | 0.2 U | 0.2 U | 196.26 | -60.7 | 121.5 | -70.7 | 131.5 | 08-Jun-11 |
| MW-178M1 | N | 4621016.10 | 370696.58 | N/A | **1.85** | 0.24 | 0.2 U | 0.2 U | 0.2 U | 196.26 | -60.7 | 121.0 | -70.7 | 131.0 | 02-Dec-11 |
| MW-179M1 | N | 4619835.15 | 372142.12 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.21 | 206.06 | 19.1 | 50.8 | 9.1 | 60.8 | 20-Jun-11 |
| MW-179M1 | N | 4619835.15 | 372142.12 | 0.11 J | N/A | N/A | N/A | N/A | N/A | 206.06 | 19.1 | 50.9 | 9.1 | 60.9 | 17-Nov-11 |
| MW-180M3 | N | 4620386.18 | 371197.72 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 218.25 | 47.3 | 15.7 | 37.3 | 25.7 | 01-Jun-11 |
| MW-180M3 | N | 4620386.18 | 371197.72 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 218.25 | 47.3 | 15.6 | 37.3 | 25.6 | 21-Nov-11 |
| MW-183M1 | N | 4619949.04 | 369859.58 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 237.41 | -48.6 | 109.4 | -58.6 | 119.4 | 21-Jun-11 |
| MW-183M1 | N | 4619949.04 | 369859.58 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 237.41 | -48.6 | 108.7 | -58.6 | 118.7 | 01-Dec-11 |
| MW-183M2 | N | 4619948.02 | 369858.91 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 237.41 | -32.6 | 93.6 | -42.6 | 103.6 | 21-Jun-11 |
| MW-183M2 | N | 4619948.02 | 369858.91 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 237.41 | -32.6 | 92.9 | -42.6 | 102.9 | 01-Dec-11 |
| MW-184M1 | FD | 4619309.33 | 371560.47 | N/A | **6.2** | 0.65 | 0.2 U | 0.2 U | 0.2 U | 189.96 | 4.0 | 63.9 | -6.0 | 73.9 | 20-Jun-11 |
| MW-184M1 | N | 4619309.33 | 371560.47 | 1.15 | **6.19** | 0.65 | 0.2 U | 0.2 U | 0.2 U | 189.96 | 4.0 | 63.9 | -6.0 | 73.9 | 20-Jun-11 |
| MW-184M1 | FD | 4619309.33 | 371560.47 | N/A | **6.92** | 0.78 | 0.2 U | 0.2 U | 0.2 U | 189.96 | 4.0 | 63.8 | -6.0 | 73.8 | 17-Nov-11 |
| MW-184M1 | N | 4619309.33 | 371560.47 | 1.2 | **7.41** | 0.84 | 0.2 U | 0.2 U | 0.2 U | 189.96 | 4.0 | 63.8 | -6.0 | 73.8 | 17-Nov-11 |
| MW-184M2 | N | 4619309.57 | 371560.60 | 0.2 U | N/A | N/A | N/A | N/A | N/A | 189.96 | 64.0 | 3.8 | 54.0 | 13.8 | 20-Jun-11 |
| MW-184M2 | N | 4619309.57 | 371560.60 | 0.039 J | N/A | N/A | N/A | N/A | N/A | 189.96 | 64.0 | 3.8 | 54.0 | 13.8 | 17-Nov-11 |
| MW-201M2 | N | 4619713.24 | 370260.99 | N/A | **0.76** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 253.56 | -32.4 | 96.4 | -42.4 | 106.4 | 26-May-11 |
| MW-201M2 | N | 4619713.24 | 370260.99 | N/A | **1.3** | 0.29 | 0.2 U | 0.2 U | 0.2 U | 253.56 | -32.4 | 96.2 | -42.4 | 106.2 | 01-Dec-11 |
| MW-202M1 | N | 4621149.78 | 370702.76 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 198.13 | -65.9 | 123.7 | -75.9 | 133.7 | 08-Jun-11 |
| MW-203M2 | N | 4620572.78 | 371508.46 | N/A | 0.61 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 204.37 | 28.4 | 37.5 | 18.4 | 47.5 | 21-Jun-11 |
| MW-203M2 | N | 4620572.78 | 371508.46 | N/A | 0.21 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 204.37 | 28.4 | 37.3 | 18.4 | 47.3 | 21-Nov-11 |
| MW-204M1 | N | 4620033.59 | 371974.40 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 119.78 | -21.2 | 88.7 | -31.2 | 98.7 | 16-Jun-11 |
| MW-204M1 | N | 4620033.59 | 371974.40 | N/A | 0.23 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 119.78 | -21.2 | 88.8 | -31.2 | 98.8 | 16-Nov-11 |
| MW-204M2 | N | 4620033.71 | 371974.53 | N/A | 0.4 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 119.78 | 43.8 | 23.6 | 33.8 | 33.6 | 16-Jun-11 |
| MW-204M2 | N | 4620033.71 | 371974.53 | N/A | 0.21 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 119.78 | 43.8 | 23.6 | 33.8 | 33.6 | 16-Nov-11 |

**Table 3-1**
**Summary of Groundwater Monitoring Results**
**2011 Central Impact Area**

| Well Name | Sample Type | Northing (meters) | Easting (meters) | Perchlorate (µg/L) | RDX (µg/L) | HMX (µg/L) | TNT (µg/L) | 2A-DNT (µg/L) | 4A-DNT (µg/L) | Surface Elevation (ft msl) | Top of Screen (ft msl) | Top of Screen (ft BWT) | Bottom of Screen (ft msl) | Bottom of Screen (ft BWT) | Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | MMCL MCP GW-1 2 µg/L | USEPA Risk Based 0.61 µg/L | USEPA Health Advisory 200 µg/L | USEPA Risk Based 30 µg/L | USEPA Risk Based 30 µg/L | USEPA Risk Based 30 µg/L | | | | | | |
| MW-207M1 | FD | 4620737.46 | 370264.93 | N/A | **5.63** | 0.55 | 0.2 U | 0.2 U | 0.2 U | 197.74 | -56.3 | 116.2 | -66.3 | 126.2 | 13-Jun-11 |
| MW-207M1 | N | 4620737.46 | 370264.93 | N/A | **5.69** | 0.54 | 0.2 U | 0.2 U | 0.2 U | 197.74 | -56.3 | 116.2 | -66.3 | 126.2 | 13-Jun-11 |
| MW-207M1 | FD | 4620737.46 | 370264.93 | N/A | **5.39** | 0.59 | 0.2 U | 0.2 U | 0.2 U | 197.74 | -56.3 | 115.5 | -66.3 | 125.5 | 21-Nov-11 |
| MW-207M1 | N | 4620737.46 | 370264.93 | N/A | **5.32** | 0.6 | 0.2 U | 0.2 U | 0.2 U | 197.74 | -56.3 | 115.5 | -66.3 | 125.5 | 21-Nov-11 |
| MW-208M1 | N | 4620500.78 | 370947.53 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 195.65 | 0.7 | 63.0 | -9.3 | 73.0 | 01-Jun-11 |
| MW-208M1 | N | 4620500.78 | 370947.53 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 195.65 | 0.7 | 62.7 | -9.3 | 72.7 | 21-Nov-11 |
| MW-209M1 | FD | 4620135.49 | 370512.13 | N/A | **6.68** | 0.56 | 0.2 U | 0.2 U | 0.2 U | 175.59 | -64.4 | 127.8 | -74.4 | 137.8 | 13-Jun-11 |
| MW-209M1 | N | 4620135.49 | 370512.13 | N/A | **6.51** | 0.57 | 0.2 U | 0.2 U | 0.2 U | 175.59 | -64.4 | 127.8 | -74.4 | 137.8 | 13-Jun-11 |
| MW-209M1 | FD | 4620135.49 | 370512.13 | N/A | **7.62** | 0.79 | 0.2 U | 0.2 U | 0.2 U | 175.59 | -64.4 | 127.2 | -74.4 | 137.2 | 01-Dec-11 |
| MW-209M1 | N | 4620135.49 | 370512.13 | N/A | **7.42** | 0.76 | 0.2 U | 0.2 U | 0.2 U | 175.59 | -64.4 | 127.2 | -74.4 | 137.2 | 01-Dec-11 |
| MW-209M2 | FD | 4620135.61 | 370512.23 | 1.14 | N/A | N/A | N/A | N/A | N/A | 175.59 | -44.4 | 107.7 | -54.4 | 117.7 | 13-Jun-11 |
| MW-209M2 | N | 4620135.61 | 370512.23 | 1.24 | N/A | N/A | N/A | N/A | N/A | 175.59 | -44.4 | 107.7 | -54.4 | 117.7 | 13-Jun-11 |
| MW-209M2 | N | 4620135.61 | 370512.23 | 1.27 | N/A | N/A | N/A | N/A | N/A | 175.59 | -44.4 | 107.2 | -54.4 | 117.2 | 01-Dec-11 |
| MW-212M1 | N | 4621233.03 | 370371.44 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 258.00 | -75.0 | 130.7 | -85.0 | 140.7 | 08-Jun-11 |
| MW-212M1 | N | 4621233.03 | 370371.44 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 258.00 | -75.0 | 130.0 | -85.0 | 140.0 | 05-Dec-11 |
| MW-223M1 | N | 4620920.65 | 369917.71 | 0.21 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 141.68 | -69.3 | 126.1 | -79.3 | 136.1 | 06-Jun-11 |
| MW-223M1 | N | 4620920.65 | 369917.71 | 0.17 J | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 141.68 | -69.3 | 125.1 | -79.3 | 135.1 | 21-Nov-11 |
| MW-223M2 | N | 4620920.83 | 369917.62 | N/A | **2.07** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 141.68 | -43.3 | 100.6 | -53.3 | 110.6 | 06-Jun-11 |
| MW-223M2 | N | 4620920.83 | 369917.62 | N/A | **2.18** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 141.68 | -43.3 | 99.6 | -53.3 | 109.6 | 21-Nov-11 |
| MW-235M1 | N | 4618924.39 | 372243.62 | N/A | **1.55** | 0.27 | 0.2 U | 0.2 U | 0.2 U | 192.75 | 38.8 | 33.3 | 28.8 | 43.3 | 31-May-11 |
| MW-235M1 | N | 4618924.39 | 372243.62 | N/A | **0.78** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 192.75 | 38.8 | 33.5 | 28.8 | 43.5 | 02-Dec-11 |
| MW-23M1 | FD | 4620602.72 | 370438.03 | N/A | **3.21** | 0.29 | 0.2 U | 0.2 U | 0.2 U | 183.28 | -41.7 | 102.7 | -51.7 | 112.7 | 13-Jun-11 |
| MW-23M1 | N | 4620602.72 | 370438.03 | 0.4 | **3.28** | 0.31 | 0.2 U | 0.2 U | 0.2 U | 183.28 | -41.7 | 102.7 | -51.7 | 112.7 | 13-Jun-11 |
| MW-23M1 | N | 4620602.72 | 370438.03 | 0.38 | **3.4** | 0.4 | 0.2 U | 0.2 U | 0.2 U | 183.28 | -41.7 | 102.0 | -51.7 | 112.0 | 05-Dec-11 |
| MW-249M2 | N | 4621278.00 | 369881.66 | N/A | 0.59 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 186.92 | 12.9 | 41.0 | 2.9 | 51.0 | 06-Jun-11 |
| MW-249M2 | N | 4621278.00 | 369881.66 | N/A | 0.44 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 186.92 | 12.9 | 39.9 | 2.9 | 49.9 | 22-Nov-11 |
| MW-25 | N | 4618771.45 | 371580.33 | N/A | 0.35 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 179.95 | 72.0 | -0.9 | 62.0 | 9.1 | 03-Jun-11 |
| MW-25 | N | 4618771.45 | 371580.33 | N/A | **1.6** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 179.95 | 72.0 | -0.9 | 62.0 | 9.1 | 30-Nov-11 |
| MW-27 | N | 4618717.93 | 372564.80 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 190.35 | 73.4 | -1.1 | 63.4 | 8.9 | 10-Jun-11 |
| MW-37M2 | N | 4618662.28 | 371899.80 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 189.95 | 45.0 | 27.3 | 35.0 | 37.3 | 17-Jun-11 |
| MW-38M3 | N | 4619173.66 | 371470.76 | 1.08 | **0.8** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 187.12 | 17.1 | 53.4 | 7.1 | 63.4 | 17-Jun-11 |
| MW-38M3 | N | 4619173.66 | 371470.76 | 0.96 | **0.68** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 187.12 | 17.1 | 53.3 | 7.1 | 63.3 | 17-Nov-11 |
| MW-38M4 | N | 4619172.62 | 371471.73 | N/A | **0.71** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 187.12 | 55.1 | 15.3 | 45.1 | 25.3 | 17-Jun-11 |
| MW-38M4 | N | 4619172.62 | 371471.73 | N/A | **1.46** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 187.12 | 55.1 | 15.2 | 45.1 | 25.2 | 17-Nov-11 |
| MW-39M2 | N | 4619457.77 | 371014.20 | 0.2 U | N/A | N/A | N/A | N/A | N/A | 201.63 | 26.6 | 41.1 | 16.6 | 51.1 | 01-Jun-11 |
| MW-40S | N | 4618646.98 | 372246.91 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 189.34 | 73.8 | -1.1 | 63.3 | 9.4 | 10-Jun-11 |
| MW-42M2 | N | 4621078.99 | 369561.17 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 120.24 | -65.6 | 119.9 | -75.8 | 130.1 | 06-Jun-11 |
| MW-42M2 | N | 4621078.99 | 369561.17 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 120.24 | -65.6 | 118.7 | -75.8 | 128.9 | 22-Nov-11 |
| MW-42M3 | N | 4621080.02 | 369560.20 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 120.24 | -45.6 | 99.8 | -55.8 | 110.0 | 06-Jun-11 |
| MW-42M3 | N | 4621080.02 | 369560.20 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 120.24 | -45.6 | 98.7 | -55.8 | 108.9 | 22-Nov-11 |
| MW-43M2 | N | 4620101.51 | 371233.87 | N/A | **0.71** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 198.11 | -1.9 | 68.0 | -11.9 | 78.0 | 02-Jun-11 |
| MW-43M2 | N | 4620101.51 | 371233.87 | N/A | 0.6 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 198.11 | -1.9 | 67.9 | -11.9 | 77.9 | 22-Nov-11 |
| MW-44M1 | N | 4619101.84 | 372235.68 | 0.8 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 197.14 | 15.1 | 56.7 | 5.1 | 66.7 | 31-May-11 |
| MW-477M1 | N | 4618748.75 | 372592.62 | 0.2 U | 0.25 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 192.29 | 4.8 | 68.1 | -5.2 | 78.1 | 20-May-11 |

**Table 3-1**
**Summary of Groundwater Monitoring Results**
**2011 Central Impact Area**

| Well Name | Sample Type | Northing (meters) | Easting (meters) | Perchlorate (µg/L) | RDX (µg/L) | HMX (µg/L) | TNT (µg/L) | 2A-DNT (µg/L) | 4A-DNT (µg/L) | Surface Elevation (ft msl) | Top of Screen (ft msl) | Top of Screen (ft BWT) | Bottom of Screen (ft msl) | Bottom of Screen (ft BWT) | Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | MMCL MCP GW-1 2 µg/L | USEPA Risk Based 0.61 µg/L | USEPA Health Advisory 200 µg/L | USEPA Risk Based 30 µg/L | USEPA Risk Based 30 µg/L | USEPA Risk Based 30 µg/L | | | | | | |
| MW-477M2 | FD | 4618743.50 | 372588.22 | N/A | **6** | 0.6 | 0.2 U | 0.2 U | 0.2 U | 192.18 | 46.6 | 25.8 | 36.6 | 35.8 | 20-May-11 |
| MW-477M2 | N | 4618743.50 | 372588.22 | 0.2 U | **6.13** | 0.61 | 0.2 U | 0.2 U | 0.2 U | 192.18 | 46.6 | 25.8 | 36.6 | 35.8 | 20-May-11 |
| MW-485M1 | N | 4618669.87 | 372632.70 | N/A | **5.87** | 0.58 | 0.2 U | 0.2 U | 0.2 U | 191.03 | 65.7 | 6.6 | 55.7 | 16.6 | 20-May-11 |
| MW-486M1 | N | 4618610.49 | 372673.31 | N/A | **0.94** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 185.45 | -0.3 | 72.2 | -10.3 | 82.2 | 13-May-11 |
| MW-487M2 | N | 4619084.70 | 372397.53 | 0.66 | **1.91** | 0.41 | 0.2 U | 0.2 U | 0.2 U | 197.02 | 1.2 | 70.4 | -8.8 | 80.4 | 31-May-11 |
| MW-50D | N | 4620930.35 | 370683.41 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 177.72 | -59.3 | 120.7 | -69.3 | 130.7 | 08-Jun-11 |
| MW-50M2 | N | 4620931.05 | 370683.43 | 0.081 J | N/A | N/A | N/A | N/A | N/A | 177.72 | 0.7 | 58.8 | -9.3 | 68.8 | 08-Jun-11 |
| MW-50M2 | N | 4620931.05 | 370683.43 | 0.085 J | N/A | N/A | N/A | N/A | N/A | 177.72 | 0.7 | 60.3 | -9.3 | 70.3 | 01-Dec-11 |
| MW-51M2 | N | 4620810.59 | 370552.94 | N/A | 0.54 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 205.33 | 2.3 | 59.3 | -7.7 | 69.3 | 13-Jun-11 |
| MW-59S | N | 4619485.08 | 372163.75 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 202.50 | 74.5 | -3.6 | 64.5 | 6.4 | 15-Jun-11 |
| MW-85M1 | N | 4618669.88 | 372047.83 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 186.49 | 49.0 | 23.2 | 39.0 | 33.2 | 09-Jun-11 |
| MW-85M1 | N | 4618669.88 | 372047.83 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 186.49 | 49.0 | 23.1 | 39.0 | 33.1 | 02-Dec-11 |
| MW-86M1 | N | 4620226.62 | 371280.05 | 0.72 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 207.45 | -0.6 | 66.7 | -10.6 | 76.7 | 02-Jun-11 |
| MW-86M1 | N | 4620226.62 | 371280.05 | 0.58 | N/A | N/A | N/A | N/A | N/A | 207.45 | -0.6 | 65.5 | -10.6 | 75.5 | 30-Nov-11 |
| MW-86M2 | N | 4620226.01 | 371280.03 | N/A | **0.72** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 207.45 | 49.5 | 16.6 | 39.5 | 26.6 | 02-Jun-11 |
| MW-86M2 | N | 4620226.01 | 371280.03 | N/A | 0.37 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 207.45 | 49.5 | 16.5 | 39.5 | 26.5 | 30-Nov-11 |
| MW-86S | N | 4620226.32 | 371280.03 | N/A | **1.25** | 0.21 | 0.2 U | 0.2 U | 0.2 U | 207.45 | 64.5 | 1.6 | 54.5 | 11.7 | 02-Jun-11 |
| MW-86S | N | 4620226.32 | 371280.03 | N/A | **1.05** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 207.45 | 64.5 | 1.5 | 54.5 | 11.5 | 30-Nov-11 |
| MW-87M1 | FD | 4619591.51 | 371017.76 | **5.45** | N/A | N/A | N/A | N/A | N/A | 197.60 | 3.6 | 63.9 | -6.4 | 73.9 | 01-Jun-11 |
| MW-87M1 | N | 4619591.51 | 371017.76 | **5.45** | **1.13** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 197.60 | 3.6 | 63.9 | -6.4 | 73.9 | 01-Jun-11 |
| MW-87M1 | FD | 4619591.51 | 371017.76 | **5.66** | N/A | N/A | N/A | N/A | N/A | 197.60 | 3.6 | 63.9 | -6.4 | 73.9 | 28-Nov-11 |
| MW-87M1 | N | 4619591.51 | 371017.76 | **5.69** | **0.89** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 197.60 | 3.6 | 63.9 | -6.4 | 73.9 | 28-Nov-11 |
| MW-88M2 | FD | 4619720.54 | 371043.41 | **5.09** | N/A | N/A | N/A | N/A | N/A | 205.80 | -7.2 | 74.2 | -17.2 | 84.2 | 01-Jun-11 |
| MW-88M2 | N | 4619720.54 | 371043.41 | **5.14** | **1.69** | 0.49 | 0.2 U | 0.2 U | 0.2 U | 205.80 | -7.2 | 74.2 | -17.2 | 84.2 | 01-Jun-11 |
| MW-88M2 | FD | 4619720.54 | 371043.41 | **5.7** | N/A | N/A | N/A | N/A | N/A | 205.80 | -7.2 | 74.1 | -17.2 | 84.1 | 28-Nov-11 |
| MW-88M2 | N | 4619720.54 | 371043.41 | **5.46** | **1.79** | 0.48 | 0.2 U | 0.2 U | 0.2 U | 205.80 | -7.2 | 74.1 | -17.2 | 84.1 | 28-Nov-11 |
| MW-88M3 | N | 4619720.84 | 371043.73 | 0.2 U | N/A | N/A | N/A | N/A | N/A | 205.80 | 32.8 | 34.1 | 22.8 | 44.1 | 01-Jun-11 |
| MW-88M3 | N | 4619720.84 | 371043.73 | 0.2 U | N/A | N/A | N/A | N/A | N/A | 205.80 | 32.8 | 34.1 | 22.8 | 44.1 | 28-Nov-11 |
| MW-89M2 | FD | 4619837.74 | 371087.19 | **10** | **14.9** | 0.63 | 0.2 U | 0.2 U | 0.2 U | 207.07 | -6.9 | 73.5 | -16.9 | 83.5 | 01-Jun-11 |
| MW-89M2 | N | 4619837.74 | 371087.19 | **9.84** | **15.5** | 0.66 | 0.2 U | 0.2 U | 0.2 U | 207.07 | -6.9 | 73.5 | -16.9 | 83.5 | 01-Jun-11 |
| MW-89M2 | FD | 4619837.74 | 371087.19 | **10.2** | **16.6** | 0.8 | 0.2 U | 0.2 U | 0.2 U | 207.07 | -6.9 | 73.4 | -16.9 | 83.4 | 28-Nov-11 |
| MW-89M2 | N | 4619837.74 | 371087.19 | **9.98** | **17.4** | 0.83 | 0.2 U | 0.2 U | 0.2 U | 207.07 | -6.9 | 73.4 | -16.9 | 83.4 | 28-Nov-11 |
| MW-89M3 | N | 4619837.84 | 371087.67 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 207.07 | 33.1 | 33.4 | 23.1 | 43.4 | 01-Jun-11 |
| MW-90S | N | 4618870.23 | 372051.32 | 0.2 U | **1.85** | 0.2 | 0.2 U | 0.2 U | 0.2 U | 187.46 | 69.5 | 2.3 | 59.5 | 12.3 | 31-May-11 |
| MW-91M1 | N | 4618980.51 | 372052.90 | N/A | **3.12** | 0.41 | 0.2 U | 0.2 U | 0.2 U | 193.78 | 23.8 | 48.0 | 13.8 | 58.0 | 31-May-11 |
| MW-91M1 | N | 4618980.51 | 372052.90 | N/A | **2.08** | 0.4 | 0.2 U | 0.2 U | 0.2 U | 193.78 | 23.8 | 48.1 | 13.8 | 58.1 | 02-Dec-11 |
| MW-91S | FD | 4618979.76 | 372052.65 | N/A | 0.2 U | 0.2 U | 1.1 | 0.44 | 0.48 | 193.78 | 69.8 | 1.9 | 59.8 | 11.9 | 31-May-11 |
| MW-91S | N | 4618979.76 | 372052.65 | 0.2 U | 0.2 U | 0.2 U | 1.07 | 0.44 | 0.47 | 193.78 | 69.8 | 1.9 | 59.8 | 11.9 | 31-May-11 |
| MW-93M1 | N | 4619097.10 | 372046.56 | 0.85 | 0.4 | 0.23 | 0.2 U | 0.2 U | 0.2 U | 197.21 | 12.2 | 59.3 | 2.2 | 69.3 | 09-Jun-11 |
| MW-93M1 | N | 4619097.10 | 372046.56 | 0.77 | N/A | N/A | N/A | N/A | N/A | 197.21 | 12.2 | 59.3 | 2.2 | 69.3 | 02-Dec-11 |
| MW-94M1 | N | 4618890.69 | 371144.93 | N/A | 0.47 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 190.94 | 30.9 | 39.0 | 20.9 | 49.0 | 15-Jun-11 |
| MW-94M2 | N | 4618889.95 | 371145.05 | N/A | 0.3 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 190.94 | 50.9 | 19.0 | 40.9 | 29.0 | 15-Jun-11 |
| MW-95M1 | N | 4619942.66 | 371175.61 | N/A | **1.54** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 189.45 | -12.6 | 79.8 | -22.6 | 89.8 | 21-Jun-11 |
| MW-95M1 | N | 4619942.66 | 371175.61 | N/A | **1.53** | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 189.45 | -12.6 | 79.5 | -22.6 | 89.5 | 28-Nov-11 |

**Table 3-1**
**Summary of Groundwater Monitoring Results**
**2011 Central Impact Area**

| Well Name | Sample Type | Northing (meters) | Easting (meters) | Perchlorate (µg/L) | RDX (µg/L) | HMX (µg/L) | TNT (µg/L) | 2A-DNT (µg/L) | 4A-DNT (µg/L) | Surface Elevation (ft msl) | Top of Screen (ft msl) | Top of Screen (ft BWT) | Bottom of Screen (ft msl) | Bottom of Screen (ft BWT) | Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | MMCL MCP GW-1 2 µg/L | USEPA Risk Based 0.61 µg/L | USEPA Health Advisory 200 µg/L | USEPA Risk Based 30 µg/L | USEPA Risk Based 30 µg/L | USEPA Risk Based 30 µg/L | | | | | | |
| MW-95M2 | N | 4619942.05 | 371175.60 | 0.23 | N/A | N/A | N/A | N/A | N/A | 189.45 | 22.5 | 44.6 | 12.5 | 54.6 | 21-Jun-11 |
| MW-95M2 | N | 4619942.05 | 371175.60 | 0.23 | N/A | N/A | N/A | N/A | N/A | 189.45 | 22.5 | 44.3 | 12.5 | 54.3 | 28-Nov-11 |
| MW-96M2 | N | 4620416.65 | 371601.34 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 198.91 | 38.9 | 27.9 | 28.9 | 37.9 | 31-May-11 |
| MW-96M2 | N | 4620416.65 | 371601.34 | 0.2 U | N/A | N/A | N/A | N/A | N/A | 198.91 | 38.9 | 27.9 | 28.9 | 37.9 | 30-Nov-11 |
| MW-97M2 | N | 4620300.92 | 371417.12 | N/A | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 187.22 | 2.2 | 64.4 | -7.8 | 74.4 | 02-Jun-11 |
| MW-98M1 | N | 4619510.25 | 372057.29 | 0.2 U | 0.56 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 205.36 | 41.4 | 29.6 | 31.4 | 39.6 | 15-Jun-11 |
| MW-99S | N | 4619411.96 | 372036.34 | 0.35 | 0.2 U | 0.085 J | 0.2 U | 0.2 U | 0.2 U | 202.19 | 69.2 | 1.7 | 59.2 | 11.7 | 14-Jun-11 |
| OW-2 | N | 4618951.54 | 372062.80 | 0.26 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 192.23 | 17.2 | 54.6 | 7.2 | 64.6 | 10-Jun-11 |
| OW-2 | N | 4618951.54 | 372062.80 | 0.2 | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 0.2 U | 192.23 | 17.2 | 54.7 | 7.2 | 64.7 | 18-Nov-11 |

Notes:

Results in ug/L
ug/L - micrograms per liter
N - normal field sample
FD - field duplicate
m - meters
N/A - not analyzed/measured
U - nondetect
J - estimated concentration

RDX - Hexahydro-1,3,5-trinitro-1,3,5-
HMX - Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
4A-DNT - 4-amino-2,6-dinitrotoluene
2A-DNT - 2-Amino-4,6-dinitrotoluene
TNT - 2,4,6-trinitrotoluene
msl - mean sea level
BWT - below water table
Bold values exceed respective standard

# Table 3-2
## Groundwater Monitoring Results for Samples Collected in 2011
## Central Impact Area

| Location | Sample Type | Analyte | Short Name | Test Method | Reported Result (ug/L) | Qualifier | RL | Top of Screen (msl) | Bottom of Screen (msl) | Log Date |
|---|---|---|---|---|---|---|---|---|---|---|
| 58MW0007B | N1 | Perchlorate | PCATE | SW6850 | 0.42 | | 0.20 | 9.7 | 4.7 | 11/29/2011 |
| 58MW0007B | N1 | Perchlorate | PCATE | SW6850 | 0.50 | | 0.20 | 9.7 | 4.7 | 06/07/2011 |
| 58MW0009C | N1 | Perchlorate | PCATE | SW6850 | 0.49 | | 0.20 | 21.3 | 16.3 | 11/29/2011 |
| 58MW0009C | N1 | Perchlorate | PCATE | SW6850 | 0.72 | | 0.20 | 21.3 | 16.3 | 06/03/2011 |
| 58MW0011D | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **2.5** | | 0.20 | 15.8 | 10.8 | 06/07/2011 |
| 58MW0011D | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 15.8 | 10.8 | 06/07/2011 |
| 58MW0015A | N1 | Perchlorate | PCATE | SW6850 | 0.21 | | 0.20 | 23.8 | 14.8 | 11/29/2011 |
| 58MW0015A | N1 | Perchlorate | PCATE | SW6850 | 0.26 | | 0.20 | 23.8 | 14.8 | 06/03/2011 |
| 58MW0016A | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 9.5 | 0.5 | 11/29/2011 |
| 58MW0016A | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 9.5 | 0.5 | 06/03/2011 |
| 58MW0017B | N1 | Perchlorate | PCATE | SW6850 | 1.0 | | 0.20 | 22.9 | 12.9 | 06/07/2011 |
| MW-01M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **1.6** | | 0.20 | 27 | 22 | 11/18/2011 |
| MW-01M2 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.22 | | 0.20 | 27 | 22 | 11/18/2011 |
| MW-01M2 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 27 | 22 | 11/18/2011 |
| MW-01M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **0.81** | | 0.20 | 27 | 22 | 05/31/2011 |
| MW-01M2 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.29 | | 0.20 | 27 | 22 | 05/31/2011 |
| MW-01M2 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 27 | 22 | 05/31/2011 |
| MW-01S | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **1.5** | | 0.20 | 73 | 63 | 06/09/2011 |
| MW-01S | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.25 | | 0.20 | 73 | 63 | 06/09/2011 |
| MW-01S | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 73 | 63 | 06/09/2011 |
| MW-02M1 | N1 | Perchlorate | PCATE | SW6850 | 0.34 | | 0.20 | -4.6 | -9.6 | 11/16/2011 |
| MW-02M1 | N1 | Perchlorate | PCATE | SW6850 | 0.38 | | 0.20 | -4.6 | -9.6 | 06/16/2011 |
| MW-02M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **0.68** | | 0.20 | 37.4 | 32.4 | 11/16/2011 |
| MW-02M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 37.4 | 32.4 | 11/16/2011 |

# Table 3-2
## Groundwater Monitoring Results for Samples Collected in 2011
## Central Impact Area

| Location | Sample Type | Analyte | Short Name | Test Method | Reported Result (ug/L) | Qualifier | RL | Top of Screen (msl) | Bottom of Screen (msl) | Log Date |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-02M2 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 37.4 | 32.4 | 06/16/2011 |
| MW-02M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.52 | | 0.20 | 37.4 | 32.4 | 06/16/2011 |
| MW-02M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 37.4 | 32.4 | 06/16/2011 |
| MW-03M2 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | -65.5 | -70.5 | 06/16/2011 |
| MW-03M2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -65.5 | -70.5 | 06/16/2011 |
| MW-100M1 | N1 | Perchlorate | PCATE | SW6850 | 0.13 | J | 0.20 | 21.9 | 11.9 | 11/15/2011 |
| MW-100M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **2.0** | | 0.20 | 21.9 | 11.9 | 11/15/2011 |
| MW-100M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.31 | | 0.20 | 21.9 | 11.9 | 11/15/2011 |
| MW-100M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 21.9 | 11.9 | 11/15/2011 |
| MW-100M1 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 21.9 | 11.9 | 06/14/2011 |
| MW-100M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **2.1** | | 0.20 | 21.9 | 11.9 | 06/14/2011 |
| MW-100M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.29 | | 0.20 | 21.9 | 11.9 | 06/14/2011 |
| MW-100M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 21.9 | 11.9 | 06/14/2011 |
| MW-100M2 | N1 | Perchlorate | PCATE | SW6850 | 0.096 | J | 0.20 | 36.9 | 26.9 | 11/16/2011 |
| MW-100M2 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 36.9 | 26.9 | 06/14/2011 |
| MW-101M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **2.9** | | 0.20 | 41.5 | 31.5 | 06/09/2011 |
| MW-101M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.27 | | 0.20 | 41.5 | 31.5 | 06/09/2011 |
| MW-101M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 41.5 | 31.5 | 06/09/2011 |
| MW-101S | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 68.5 | 58.5 | 06/09/2011 |
| MW-102M2 | N1 | Perchlorate | PCATE | SW6850 | 0.41 | | 0.20 | -33.3 | -43.3 | 12/06/2011 |
| MW-102M2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -33.3 | -43.3 | 12/06/2011 |
| MW-102M2 | N1 | Perchlorate | PCATE | SW6850 | 0.32 | | 0.20 | -33.3 | -43.3 | 06/02/2011 |
| MW-102M2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -33.3 | -43.3 | 06/02/2011 |
| MW-105M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.56 | | 0.20 | -8.3 | -18.3 | 11/16/2011 |

# Table 3-2
## Groundwater Monitoring Results for Samples Collected in 2011
## Central Impact Area

| Location | Sample Type | Analyte | Short Name | Test Method | Reported Result (ug/L) | Qualifier | RL | Top of Screen (msl) | Bottom of Screen (msl) | Log Date |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-105M1 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -8.3 | -18.3 | 11/16/2011 |
| MW-105M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.39 | | 0.20 | -8.3 | -18.3 | 06/17/2011 |
| MW-105M1 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -8.3 | -18.3 | 06/17/2011 |
| MW-106M1 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 31.6 | 21.6 | 05/23/2011 |
| MW-106M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 31.6 | 21.6 | 05/23/2011 |
| MW-106M1 | N1 | Perchlorate | PCATE | SW6850 | 0.064 | J | 0.015 | 31.6 | 21.6 | 12/05/2011 |
| MW-106M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 31.6 | 21.6 | 12/05/2011 |
| MW-107M1 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 34.8 | 24.8 | 06/10/2011 |
| MW-107M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **2.5** | | 0.20 | 64.8 | 54.8 | 06/10/2011 |
| MW-107M2 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.24 | | 0.20 | 64.8 | 54.8 | 06/10/2011 |
| MW-107M2 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 64.8 | 54.8 | 06/10/2011 |
| MW-107M2 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 64.8 | 54.8 | 06/10/2011 |
| MW-108D | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | -91.7 | -101.7 | 12/06/2011 |
| MW-108D | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | -91.7 | -101.7 | 05/26/2011 |
| MW-108M1 | N1 | Perchlorate | PCATE | SW6850 | 0.22 | | 0.20 | -71.9 | -81.9 | 12/06/2011 |
| MW-108M1 | N1 | Perchlorate | PCATE | SW6850 | 0.23 | | 0.20 | -71.9 | -81.9 | 05/26/2011 |
| MW-108M4 | N1 | Perchlorate | PCATE | SW6850 | 0.16 | J | 0.20 | -14.7 | -24.7 | 12/06/2011 |
| MW-108M4 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | -14.7 | -24.7 | 05/26/2011 |
| MW-110M2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -14.3 | -24.3 | 12/06/2011 |
| MW-110M2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -14.3 | -24.3 | 05/26/2011 |
| MW-111M1 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | -26 | -36 | 11/30/2011 |
| MW-111M1 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | -26 | -36 | 06/07/2011 |
| MW-111M2 | N1 | Perchlorate | PCATE | SW6850 | 0.52 | | 0.20 | 16 | 6 | 06/07/2011 |
| MW-111M2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 16 | 6 | 06/07/2011 |
| MW-112M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 11.2 | 1.2 | 06/20/2011 |

# Table 3-2
## Groundwater Monitoring Results for Samples Collected in 2011
## Central Impact Area

| Location | Sample Type | Analyte | Short Name | Test Method | Reported Result (ug/L) | Qualifier | RL | Top of Screen (msl) | Bottom of Screen (msl) | Log Date |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-112M2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 41.2 | 31.2 | 11/16/2011 |
| MW-112M2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 41.2 | 31.2 | 06/20/2011 |
| MW-112M2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | UJ | ND | 41.2 | 31.2 | 06/20/2011 |
| MW-113M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **1.4** | | 0.20 | 18.2 | 8.2 | 11/17/2011 |
| MW-113M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 18.2 | 8.2 | 11/17/2011 |
| MW-113M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **0.67** | | 0.20 | 18.2 | 8.2 | 06/17/2011 |
| MW-113M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 18.2 | 8.2 | 06/17/2011 |
| MW-115M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 47.6 | 37.6 | 06/15/2011 |
| MW-123M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **5.5** | | 0.20 | -92.7 | -102.7 | 12/05/2011 |
| MW-123M1 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -92.7 | -102.7 | 12/05/2011 |
| MW-123M1 | FD1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **5.5** | | 0.20 | -92.7 | -102.7 | 12/05/2011 |
| MW-123M1 | FD1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -92.7 | -102.7 | 12/05/2011 |
| MW-123M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **3.4** | | 0.20 | -92.7 | -102.7 | 06/22/2011 |
| MW-123M1 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -92.7 | -102.7 | 06/22/2011 |
| MW-123M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.24 | | 0.20 | -37.7 | -47.7 | 12/05/2011 |
| MW-123M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -37.7 | -47.7 | 12/05/2011 |
| MW-123M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.28 | | 0.20 | -37.7 | -47.7 | 06/22/2011 |
| MW-123M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -37.7 | -47.7 | 06/22/2011 |
| MW-135M2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -31.8 | -41.8 | 06/14/2011 |
| MW-141M1 | N1 | Perchlorate | PCATE | SW6850 | 0.17 | J | 0.20 | 5 | -5 | 11/17/2011 |
| MW-141M1 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 5 | -5 | 06/22/2011 |

# Table 3-2
## Groundwater Monitoring Results for Samples Collected in 2011
## Central Impact Area

| Location | Sample Type | Analyte | Short Name | Test Method | Reported Result (ug/L) | Qualifier | RL | Top of Screen (msl) | Bottom of Screen (msl) | Log Date |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-141M2 | N1 | Perchlorate | PCATE | SW6850 | 0.23 | | 0.20 | 33 | 23 | 11/17/2011 |
| MW-141M2 | N1 | Perchlorate | PCATE | SW6850 | 0.26 | | 0.20 | 33 | 23 | 06/22/2011 |
| MW-149M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.20 | | 0.20 | -82.4 | -92.4 | 06/06/2011 |
| MW-149M1 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -82.4 | -92.4 | 06/06/2011 |
| MW-176M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **3.3** | | 0.20 | -104.4 | -114.4 | 12/01/2011 |
| MW-176M1 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -104.4 | -114.4 | 12/01/2011 |
| MW-176M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **3.2** | | 0.20 | -104.4 | -114.4 | 06/13/2011 |
| MW-176M1 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -104.4 | -114.4 | 06/13/2011 |
| MW-176M1 | FD1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **3.1** | | 0.20 | -104.4 | -114.4 | 06/13/2011 |
| MW-176M1 | FD1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -104.4 | -114.4 | 06/13/2011 |
| MW-178M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **1.9** | | 0.20 | -60.7 | -70.7 | 12/02/2011 |
| MW-178M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.24 | | 0.20 | -60.7 | -70.7 | 12/02/2011 |
| MW-178M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -60.7 | -70.7 | 12/02/2011 |
| MW-178M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **1.5** | | 0.20 | -60.7 | -70.7 | 06/08/2011 |
| MW-178M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.13 | J | 0.20 | -60.7 | -70.7 | 06/08/2011 |
| MW-178M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -60.7 | -70.7 | 06/08/2011 |
| MW-179M1 | N1 | Perchlorate | PCATE | SW6850 | 0.11 | J | 0.20 | 19.1 | 9.1 | 11/17/2011 |
| MW-179M1 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 19.1 | 9.1 | 06/20/2011 |
| MW-179M1 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 19.1 | 9.1 | 06/20/2011 |
| MW-179M1 | N1 | 4-Amino-2,6-dinitrotoluene | A4DNT26 | SW8330 | 0.21 | | 0.20 | 19.1 | 9.1 | 06/20/2011 |
| MW-180M3 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 47.3 | 37.3 | 11/21/2011 |
| MW-180M3 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 47.3 | 37.3 | 06/01/2011 |

# Table 3-2
## Groundwater Monitoring Results for Samples Collected in 2011
## Central Impact Area

| Location | Sample Type | Analyte | Short Name | Test Method | Reported Result (ug/L) | Qualifier | RL | Top of Screen (msl) | Bottom of Screen (msl) | Log Date |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-183M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -48.6 | -58.6 | 12/01/2011 |
| MW-183M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -48.6 | -58.6 | 06/21/2011 |
| MW-183M2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -32.6 | -42.6 | 12/01/2011 |
| MW-183M2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -32.6 | -42.6 | 06/21/2011 |
| MW-184M1 | N1 | Perchlorate | PCATE | SW6850 | 1.2 | | 0.20 | 4 | -6 | 11/17/2011 |
| MW-184M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **7.4** | | 0.20 | 4 | -6 | 11/17/2011 |
| MW-184M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.84 | | 0.20 | 4 | -6 | 11/17/2011 |
| MW-184M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 4 | -6 | 11/17/2011 |
| MW-184M1 | FD1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **6.9** | | 0.20 | 4 | -6 | 11/17/2011 |
| MW-184M1 | FD1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.78 | | 0.20 | 4 | -6 | 11/17/2011 |
| MW-184M1 | FD1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 4 | -6 | 11/17/2011 |
| MW-184M1 | N1 | Perchlorate | PCATE | SW6850 | 1.2 | | 0.20 | 4 | -6 | 06/20/2011 |
| MW-184M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **6.2** | | 0.20 | 4 | -6 | 06/20/2011 |
| MW-184M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.65 | | 0.20 | 4 | -6 | 06/20/2011 |
| MW-184M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 4 | -6 | 06/20/2011 |
| MW-184M1 | FD1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **6.2** | | 0.20 | 4 | -6 | 06/20/2011 |
| MW-184M1 | FD1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.65 | | 0.20 | 4 | -6 | 06/20/2011 |
| MW-184M1 | FD1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 4 | -6 | 06/20/2011 |
| MW-184M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **6.5** | J | 0.20 | 4 | -6 | 06/20/2011 |
| MW-184M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.81 | J | 0.20 | 4 | -6 | 06/20/2011 |
| MW-184M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 4 | -6 | 06/20/2011 |

# Table 3-2
## Groundwater Monitoring Results for Samples Collected in 2011
## Central Impact Area

| Location | Sample Type | Analyte | Short Name | Test Method | Reported Result (ug/L) | Qualifier | RL | Top of Screen (msl) | Bottom of Screen (msl) | Log Date |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-184M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | UJ | ND | 4 | -6 | 06/20/2011 |
| MW-184M2 | N1 | Perchlorate | PCATE | SW6850 | 0.039 | J | 0.20 | 64 | 54 | 11/17/2011 |
| MW-184M2 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 64 | 54 | 06/20/2011 |
| MW-201M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **1.3** | | 0.20 | -32.4 | -42.4 | 12/01/2011 |
| MW-201M2 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.29 | | 0.20 | -32.4 | -42.4 | 12/01/2011 |
| MW-201M2 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -32.4 | -42.4 | 12/01/2011 |
| MW-201M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **0.76** | | 0.20 | -32.4 | -42.4 | 05/26/2011 |
| MW-201M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -32.4 | -42.4 | 05/26/2011 |
| MW-202M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -65.9 | -75.9 | 06/08/2011 |
| MW-203M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.21 | | 0.20 | 28.4 | 18.4 | 11/21/2011 |
| MW-203M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 28.4 | 18.4 | 11/21/2011 |
| MW-203M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **0.61** | | 0.20 | 28.4 | 18.4 | 06/21/2011 |
| MW-203M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 28.4 | 18.4 | 06/21/2011 |
| MW-204M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.23 | | 0.20 | -21.2 | -31.2 | 11/16/2011 |
| MW-204M1 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -21.2 | -31.2 | 11/16/2011 |
| MW-204M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -21.2 | -31.2 | 06/16/2011 |
| MW-204M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.21 | | 0.20 | 43.8 | 33.8 | 11/16/2011 |
| MW-204M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 43.8 | 33.8 | 11/16/2011 |
| MW-204M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.40 | | 0.20 | 43.8 | 33.8 | 06/16/2011 |
| MW-204M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 43.8 | 33.8 | 06/16/2011 |
| MW-207M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **5.3** | | 0.20 | -56.3 | -66.3 | 11/21/2011 |

# Table 3-2
## Groundwater Monitoring Results for Samples Collected in 2011
## Central Impact Area

| Location | Sample Type | Analyte | Short Name | Test Method | Reported Result (ug/L) | Qualifier | RL | Top of Screen (msl) | Bottom of Screen (msl) | Log Date |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-207M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.60 | | 0.20 | -56.3 | -66.3 | 11/21/2011 |
| MW-207M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -56.3 | -66.3 | 11/21/2011 |
| MW-207M1 | FD1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **5.4** | | 0.20 | -56.3 | -66.3 | 11/21/2011 |
| MW-207M1 | FD1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.59 | | 0.20 | -56.3 | -66.3 | 11/21/2011 |
| MW-207M1 | FD1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -56.3 | -66.3 | 11/21/2011 |
| MW-207M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **5.7** | | 0.20 | -56.3 | -66.3 | 06/13/2011 |
| MW-207M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.54 | | 0.20 | -56.3 | -66.3 | 06/13/2011 |
| MW-207M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -56.3 | -66.3 | 06/13/2011 |
| MW-207M1 | FD1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **5.6** | | 0.20 | -56.3 | -66.3 | 06/13/2011 |
| MW-207M1 | FD1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.55 | | 0.20 | -56.3 | -66.3 | 06/13/2011 |
| MW-207M1 | FD1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -56.3 | -66.3 | 06/13/2011 |
| MW-208M1 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 0.7 | -9.3 | 11/21/2011 |
| MW-208M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 0.7 | -9.3 | 11/21/2011 |
| MW-208M1 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 0.7 | -9.3 | 06/01/2011 |
| MW-208M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 0.7 | -9.3 | 06/01/2011 |
| MW-208M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | UJ | ND | 0.7 | -9.3 | 06/01/2011 |
| MW-209M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **7.4** | | 0.20 | -64.4 | -74.4 | 12/01/2011 |
| MW-209M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.76 | | 0.20 | -64.4 | -74.4 | 12/01/2011 |
| MW-209M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -64.4 | -74.4 | 12/01/2011 |
| MW-209M1 | FD1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **7.6** | | 0.20 | -64.4 | -74.4 | 12/01/2011 |
| MW-209M1 | FD1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.79 | | 0.20 | -64.4 | -74.4 | 12/01/2011 |

# Table 3-2
## Groundwater Monitoring Results for Samples Collected in 2011
## Central Impact Area

| Location | Sample Type | Analyte | Short Name | Test Method | Reported Result (ug/L) | Qualifier | RL | Top of Screen (msl) | Bottom of Screen (msl) | Log Date |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-209M1 | FD1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -64.4 | -74.4 | 12/01/2011 |
| MW-209M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **6.5** | | 0.20 | -64.4 | -74.4 | 06/13/2011 |
| MW-209M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.57 | | 0.20 | -64.4 | -74.4 | 06/13/2011 |
| MW-209M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -64.4 | -74.4 | 06/13/2011 |
| MW-209M1 | FD1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **6.7** | | 0.20 | -64.4 | -74.4 | 06/13/2011 |
| MW-209M1 | FD1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.56 | | 0.20 | -64.4 | -74.4 | 06/13/2011 |
| MW-209M1 | FD1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -64.4 | -74.4 | 06/13/2011 |
| MW-209M2 | N1 | Perchlorate | PCATE | SW6850 | 1.3 | | 0.20 | -44.4 | -54.4 | 12/01/2011 |
| MW-209M2 | N1 | Perchlorate | PCATE | SW6850 | 1.2 | | 0.20 | -44.4 | -54.4 | 06/13/2011 |
| MW-209M2 | FD1 | Perchlorate | PCATE | SW6850 | 1.1 | | 0.20 | -44.4 | -54.4 | 06/13/2011 |
| MW-212M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -75 | -85 | 12/05/2011 |
| MW-212M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -75 | -85 | 06/08/2011 |
| MW-223M1 | N1 | Perchlorate | PCATE | SW6850 | 0.17 | J | 0.20 | -69.3 | -79.3 | 11/21/2011 |
| MW-223M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -69.3 | -79.3 | 11/21/2011 |
| MW-223M1 | N1 | Perchlorate | PCATE | SW6850 | 0.21 | | 0.20 | -69.3 | -79.3 | 06/06/2011 |
| MW-223M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -69.3 | -79.3 | 06/06/2011 |
| MW-223M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **2.2** | | 0.20 | -43.3 | -53.3 | 11/21/2011 |
| MW-223M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -43.3 | -53.3 | 11/21/2011 |
| MW-223M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **2.1** | | 0.20 | -43.3 | -53.3 | 06/06/2011 |
| MW-223M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -43.3 | -53.3 | 06/06/2011 |
| MW-235M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **0.78** | | 0.20 | 38.8 | 28.8 | 12/02/2011 |
| MW-235M1 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 38.8 | 28.8 | 12/02/2011 |

# Table 3-2
## Groundwater Monitoring Results for Samples Collected in 2011
## Central Impact Area

| Location | Sample Type | Analyte | Short Name | Test Method | Reported Result (ug/L) | Qualifier | RL | Top of Screen (msl) | Bottom of Screen (msl) | Log Date |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-235M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **1.6** | | 0.20 | 38.8 | 28.8 | 05/31/2011 |
| MW-235M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.27 | | 0.20 | 38.8 | 28.8 | 05/31/2011 |
| MW-235M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 38.8 | 28.8 | 05/31/2011 |
| MW-23M1 | N1 | Perchlorate | PCATE | SW6850 | 0.38 | | 0.20 | -41.7 | -51.7 | 12/05/2011 |
| MW-23M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **3.4** | | 0.20 | -41.7 | -51.7 | 12/05/2011 |
| MW-23M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.40 | | 0.20 | -41.7 | -51.7 | 12/05/2011 |
| MW-23M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -41.7 | -51.7 | 12/05/2011 |
| MW-23M1 | N1 | Perchlorate | PCATE | SW6850 | 0.40 | | 0.20 | -41.7 | -51.7 | 06/13/2011 |
| MW-23M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **3.3** | | 0.20 | -41.7 | -51.7 | 06/13/2011 |
| MW-23M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.31 | | 0.20 | -41.7 | -51.7 | 06/13/2011 |
| MW-23M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -41.7 | -51.7 | 06/13/2011 |
| MW-23M1 | FD1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **3.2** | | 0.20 | -41.7 | -51.7 | 06/13/2011 |
| MW-23M1 | FD1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.29 | | 0.20 | -41.7 | -51.7 | 06/13/2011 |
| MW-23M1 | FD1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -41.7 | -51.7 | 06/13/2011 |
| MW-249M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.44 | | 0.20 | 12.9 | 2.9 | 11/22/2011 |
| MW-249M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 12.9 | 2.9 | 11/22/2011 |
| MW-249M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.59 | | 0.20 | 12.9 | 2.9 | 06/06/2011 |
| MW-249M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 12.9 | 2.9 | 06/06/2011 |
| MW-25 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **1.6** | | 0.20 | 72 | 62 | 11/30/2011 |
| MW-25 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 72 | 62 | 11/30/2011 |
| MW-25 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.35 | | 0.20 | 72 | 62 | 06/03/2011 |

# Table 3-2
## Groundwater Monitoring Results for Samples Collected in 2011
## Central Impact Area

| Location | Sample Type | Analyte | Short Name | Test Method | Reported Result (ug/L) | Qualifier | RL | Top of Screen (msl) | Bottom of Screen (msl) | Log Date |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-25 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 72 | 62 | 06/03/2011 |
| MW-27 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 73.4 | 63.4 | 06/10/2011 |
| MW-37M2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 45 | 35 | 06/17/2011 |
| MW-38M3 | N1 | Perchlorate | PCATE | SW6850 | 0.96 | | 0.20 | 17.1 | 7.1 | 11/17/2011 |
| MW-38M3 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **0.68** | | 0.20 | 17.1 | 7.1 | 11/17/2011 |
| MW-38M3 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 17.1 | 7.1 | 11/17/2011 |
| MW-38M3 | N1 | Perchlorate | PCATE | SW6850 | 1.1 | | 0.20 | 17.1 | 7.1 | 06/17/2011 |
| MW-38M3 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **0.80** | | 0.20 | 17.1 | 7.1 | 06/17/2011 |
| MW-38M3 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 17.1 | 7.1 | 06/17/2011 |
| MW-38M4 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **1.5** | | 0.20 | 55.1 | 45.1 | 11/17/2011 |
| MW-38M4 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 55.1 | 45.1 | 11/17/2011 |
| MW-38M4 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **0.71** | | 0.20 | 55.1 | 45.1 | 06/17/2011 |
| MW-38M4 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 55.1 | 45.1 | 06/17/2011 |
| MW-39M2 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 26.6 | 16.6 | 06/01/2011 |
| MW-40S | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 73.8 | 63.3 | 06/10/2011 |
| MW-42M2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -65.6 | -75.8 | 11/22/2011 |
| MW-42M2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -65.6 | -75.8 | 06/06/2011 |
| MW-42M3 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -45.6 | -55.8 | 11/22/2011 |
| MW-42M3 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -45.6 | -55.8 | 06/06/2011 |
| MW-43M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.60 | | 0.20 | -1.9 | -11.9 | 11/22/2011 |

# Table 3-2
## Groundwater Monitoring Results for Samples Collected in 2011
## Central Impact Area

| Location | Sample Type | Analyte | Short Name | Test Method | Reported Result (ug/L) | Qualifier | RL | Top of Screen (msl) | Bottom of Screen (msl) | Log Date |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-43M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -1.9 | -11.9 | 11/22/2011 |
| MW-43M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **0.71** | | 0.20 | -1.9 | -11.9 | 06/02/2011 |
| MW-43M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -1.9 | -11.9 | 06/02/2011 |
| MW-44M1 | N1 | Perchlorate | PCATE | SW6850 | 0.80 | | 0.20 | 15.1 | 5.1 | 05/31/2011 |
| MW-44M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 15.1 | 5.1 | 05/31/2011 |
| MW-477M1 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 4.8 | -5.2 | 05/20/2011 |
| MW-477M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.25 | | 0.20 | 4.8 | -5.2 | 05/20/2011 |
| MW-477M1 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 4.8 | -5.2 | 05/20/2011 |
| MW-477M2 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 46.6 | 36.6 | 05/20/2011 |
| MW-477M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **6.1** | | 0.20 | 46.6 | 36.6 | 05/20/2011 |
| MW-477M2 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.61 | | 0.20 | 46.6 | 36.6 | 05/20/2011 |
| MW-477M2 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 46.6 | 36.6 | 05/20/2011 |
| MW-477M2 | FD1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **6.0** | | 0.20 | 46.6 | 36.6 | 05/20/2011 |
| MW-477M2 | FD1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.60 | | 0.20 | 46.6 | 36.6 | 05/20/2011 |
| MW-477M2 | FD1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 46.6 | 36.6 | 05/20/2011 |
| MW-485M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **5.9** | | 0.20 | 65.7 | 55.7 | 05/20/2011 |
| MW-485M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.58 | | 0.20 | 65.7 | 55.7 | 05/20/2011 |
| MW-485M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 65.7 | 55.7 | 05/20/2011 |
| MW-486M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **0.94** | | 0.20 | -0.3 | -10.3 | 05/13/2011 |
| MW-486M1 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -0.3 | -10.3 | 05/13/2011 |
| MW-487M2 | N1 | Perchlorate | PCATE | SW6850 | 0.66 | | 0.20 | 1.2 | -8.8 | 05/31/2011 |
| MW-487M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **1.9** | | 0.20 | 1.2 | -8.8 | 05/31/2011 |

# Table 3-2
## Groundwater Monitoring Results for Samples Collected in 2011
## Central Impact Area

| Location | Sample Type | Analyte | Short Name | Test Method | Reported Result (ug/L) | Qualifier | RL | Top of Screen (msl) | Bottom of Screen (msl) | Log Date |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-487M2 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.41 | | 0.20 | 1.2 | -8.8 | 05/31/2011 |
| MW-487M2 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 1.2 | -8.8 | 05/31/2011 |
| MW-50D | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -59.3 | -69.3 | 06/08/2011 |
| MW-50M2 | N1 | Perchlorate | PCATE | SW6850 | 0.085 | J | 0.20 | 0.7 | -9.3 | 12/01/2011 |
| MW-50M2 | N1 | Perchlorate | PCATE | SW6850 | 0.081 | J | 0.20 | 0.7 | -9.3 | 06/08/2011 |
| MW-51M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.54 | | 0.20 | 2.3 | -7.7 | 06/13/2011 |
| MW-51M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 2.3 | -7.7 | 06/13/2011 |
| MW-59S | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 74.5 | 64.5 | 06/15/2011 |
| MW-85M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 49 | 39 | 12/02/2011 |
| MW-85M1 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 49 | 39 | 06/09/2011 |
| MW-85M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 49 | 39 | 06/09/2011 |
| MW-86M1 | N1 | Perchlorate | PCATE | SW6850 | 0.58 | | 0.20 | -0.6 | -10.6 | 11/30/2011 |
| MW-86M1 | N1 | Perchlorate | PCATE | SW6850 | 0.72 | | 0.20 | -0.6 | -10.6 | 06/02/2011 |
| MW-86M1 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -0.6 | -10.6 | 06/02/2011 |
| MW-86M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.37 | | 0.20 | 49.5 | 39.5 | 11/30/2011 |
| MW-86M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 49.5 | 39.5 | 11/30/2011 |
| MW-86M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **0.72** | | 0.20 | 49.5 | 39.5 | 06/02/2011 |
| MW-86M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 49.5 | 39.5 | 06/02/2011 |
| MW-86S | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **1.1** | | 0.20 | 64.5 | 54.5 | 11/30/2011 |
| MW-86S | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 64.5 | 54.5 | 11/30/2011 |
| MW-86S | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **1.3** | | 0.20 | 64.5 | 54.5 | 06/02/2011 |
| MW-86S | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.21 | | 0.20 | 64.5 | 54.5 | 06/02/2011 |

# Table 3-2
## Groundwater Monitoring Results for Samples Collected in 2011
## Central Impact Area

| Location | Sample Type | Analyte | Short Name | Test Method | Reported Result (ug/L) | Qualifier | RL | Top of Screen (msl) | Bottom of Screen (msl) | Log Date |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-86S | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 64.5 | 54.5 | 06/02/2011 |
| MW-87M1 | N1 | Perchlorate | PCATE | SW6850 | **5.7** | | 0.20 | 3.6 | -6.4 | 11/28/2011 |
| MW-87M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **0.89** | | 0.20 | 3.6 | -6.4 | 11/28/2011 |
| MW-87M1 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 3.6 | -6.4 | 11/28/2011 |
| MW-87M1 | FD1 | Perchlorate | PCATE | SW6850 | **5.7** | | 0.20 | 3.6 | -6.4 | 11/28/2011 |
| MW-87M1 | N1 | Perchlorate | PCATE | SW6850 | **5.5** | | 0.20 | 3.6 | -6.4 | 06/01/2011 |
| MW-87M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **1.1** | | 0.20 | 3.6 | -6.4 | 06/01/2011 |
| MW-87M1 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 3.6 | -6.4 | 06/01/2011 |
| MW-87M1 | FD1 | Perchlorate | PCATE | SW6850 | **5.5** | | 0.20 | 3.6 | -6.4 | 06/01/2011 |
| MW-88M2 | N1 | Perchlorate | PCATE | SW6850 | **5.5** | | 0.20 | -7.2 | -17.2 | 11/28/2011 |
| MW-88M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **1.8** | | 0.20 | -7.2 | -17.2 | 11/28/2011 |
| MW-88M2 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.48 | | 0.20 | -7.2 | -17.2 | 11/28/2011 |
| MW-88M2 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -7.2 | -17.2 | 11/28/2011 |
| MW-88M2 | FD1 | Perchlorate | PCATE | SW6850 | **5.7** | | 0.20 | -7.2 | -17.2 | 11/28/2011 |
| MW-88M2 | N1 | Perchlorate | PCATE | SW6850 | **5.1** | | 0.20 | -7.2 | -17.2 | 06/01/2011 |
| MW-88M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **1.7** | | 0.20 | -7.2 | -17.2 | 06/01/2011 |
| MW-88M2 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.49 | | 0.20 | -7.2 | -17.2 | 06/01/2011 |
| MW-88M2 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -7.2 | -17.2 | 06/01/2011 |
| MW-88M2 | FD1 | Perchlorate | PCATE | SW6850 | **5.1** | | 0.20 | -7.2 | -17.2 | 06/01/2011 |
| MW-88M3 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 32.8 | 22.8 | 11/28/2011 |
| MW-88M3 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 32.8 | 22.8 | 06/01/2011 |
| MW-89M2 | N1 | Perchlorate | PCATE | SW6850 | **10.0** | | 0.20 | -6.9 | -16.9 | 11/28/2011 |
| MW-89M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **17.4** | | 0.20 | -6.9 | -16.9 | 11/28/2011 |
| MW-89M2 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.83 | | 0.20 | -6.9 | -16.9 | 11/28/2011 |
| MW-89M2 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -6.9 | -16.9 | 11/28/2011 |
| MW-89M2 | FD1 | Perchlorate | PCATE | SW6850 | **10.2** | | 0.40 | -6.9 | -16.9 | 11/28/2011 |
| MW-89M2 | FD1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **16.6** | | 0.20 | -6.9 | -16.9 | 11/28/2011 |

# Table 3-2
## Groundwater Monitoring Results for Samples Collected in 2011
## Central Impact Area

| Location | Sample Type | Analyte | Short Name | Test Method | Reported Result (ug/L) | Qualifier | RL | Top of Screen (msl) | Bottom of Screen (msl) | Log Date |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-89M2 | FD1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.80 | | 0.20 | -6.9 | -16.9 | 11/28/2011 |
| MW-89M2 | FD1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -6.9 | -16.9 | 11/28/2011 |
| MW-89M2 | N1 | Perchlorate | PCATE | SW6850 | **9.8** | | 0.20 | -6.9 | -16.9 | 06/01/2011 |
| MW-89M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **15.5** | | 0.20 | -6.9 | -16.9 | 06/01/2011 |
| MW-89M2 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.66 | | 0.20 | -6.9 | -16.9 | 06/01/2011 |
| MW-89M2 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -6.9 | -16.9 | 06/01/2011 |
| MW-89M2 | FD1 | Perchlorate | PCATE | SW6850 | **10.0** | | 0.20 | -6.9 | -16.9 | 06/01/2011 |
| MW-89M2 | FD1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **14.9** | | 0.20 | -6.9 | -16.9 | 06/01/2011 |
| MW-89M2 | FD1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.63 | | 0.20 | -6.9 | -16.9 | 06/01/2011 |
| MW-89M2 | FD1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -6.9 | -16.9 | 06/01/2011 |
| MW-89M3 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 33.1 | 23.1 | 06/01/2011 |
| MW-90S | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 69.5 | 59.5 | 05/31/2011 |
| MW-90S | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **1.9** | | 0.20 | 69.5 | 59.5 | 05/31/2011 |
| MW-90S | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.20 | | 0.20 | 69.5 | 59.5 | 05/31/2011 |
| MW-90S | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 69.5 | 59.5 | 05/31/2011 |
| MW-91M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **2.1** | | 0.20 | 23.8 | 13.8 | 12/02/2011 |
| MW-91M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.40 | | 0.20 | 23.8 | 13.8 | 12/02/2011 |
| MW-91M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 23.8 | 13.8 | 12/02/2011 |
| MW-91M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **3.1** | | 0.20 | 23.8 | 13.8 | 05/31/2011 |
| MW-91M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.41 | | 0.20 | 23.8 | 13.8 | 05/31/2011 |
| MW-91M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 23.8 | 13.8 | 05/31/2011 |
| MW-91S | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 69.8 | 59.8 | 05/31/2011 |

# Table 3-2
## Groundwater Monitoring Results for Samples Collected in 2011
## Central Impact Area

| Location | Sample Type | Analyte | Short Name | Test Method | Reported Result (ug/L) | Qualifier | RL | Top of Screen (msl) | Bottom of Screen (msl) | Log Date |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-91S | N1 | 2,4,6-Trinitrotoluene | TNT | SW8330 | 1.1 | | 0.20 | 69.8 | 59.8 | 05/31/2011 |
| MW-91S | N1 | 2-Amino-4,6-dinitrotoluene | A2DNT46 | SW8330 | 0.44 | | 0.20 | 69.8 | 59.8 | 05/31/2011 |
| MW-91S | N1 | 4-Amino-2,6-dinitrotoluene | A4DNT26 | SW8330 | 0.47 | | 0.20 | 69.8 | 59.8 | 05/31/2011 |
| MW-91S | N1 | ND for 16 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 69.8 | 59.8 | 05/31/2011 |
| MW-91S | FD1 | 2,4,6-Trinitrotoluene | TNT | SW8330 | 1.1 | | 0.20 | 69.8 | 59.8 | 05/31/2011 |
| MW-91S | FD1 | 2-Amino-4,6-dinitrotoluene | A2DNT46 | SW8330 | 0.44 | | 0.20 | 69.8 | 59.8 | 05/31/2011 |
| MW-91S | FD1 | 4-Amino-2,6-dinitrotoluene | A4DNT26 | SW8330 | 0.48 | | 0.20 | 69.8 | 59.8 | 05/31/2011 |
| MW-91S | FD1 | ND for 16 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 69.8 | 59.8 | 05/31/2011 |
| MW-93M1 | N1 | Perchlorate | PCATE | SW6850 | 0.77 | | 0.20 | 12.2 | 2.2 | 12/02/2011 |
| MW-93M1 | N1 | Perchlorate | PCATE | SW6850 | 0.85 | | 0.20 | 12.2 | 2.2 | 06/09/2011 |
| MW-93M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.40 | | 0.20 | 12.2 | 2.2 | 06/09/2011 |
| MW-93M1 | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.23 | | 0.20 | 12.2 | 2.2 | 06/09/2011 |
| MW-93M1 | N1 | ND for 17 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 12.2 | 2.2 | 06/09/2011 |
| MW-94M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.47 | | 0.20 | 30.9 | 20.9 | 06/15/2011 |
| MW-94M1 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 30.9 | 20.9 | 06/15/2011 |
| MW-94M2 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.30 | | 0.20 | 50.9 | 40.9 | 06/15/2011 |
| MW-94M2 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 50.9 | 40.9 | 06/15/2011 |
| MW-95M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **1.5** | | 0.20 | -12.6 | -22.6 | 11/28/2011 |
| MW-95M1 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -12.6 | -22.6 | 11/28/2011 |
| MW-95M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | **1.5** | | 0.20 | -12.6 | -22.6 | 06/21/2011 |
| MW-95M1 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | -12.6 | -22.6 | 06/21/2011 |
| MW-95M2 | N1 | Perchlorate | PCATE | SW6850 | 0.23 | | 0.20 | 22.5 | 12.5 | 11/28/2011 |
| MW-95M2 | N1 | Perchlorate | PCATE | SW6850 | 0.23 | | 0.20 | 22.5 | 12.5 | 06/21/2011 |
| MW-96M2 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 38.9 | 28.9 | 11/30/2011 |
| MW-96M2 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 38.9 | 28.9 | 05/31/2011 |

# Table 3-2
## Groundwater Monitoring Results for Samples Collected in 2011
## Central Impact Area

| Location | Sample Type | Analyte | Short Name | Test Method | Reported Result (ug/L) | Qualifier | RL | Top of Screen (msl) | Bottom of Screen (msl) | Log Date |
|---|---|---|---|---|---|---|---|---|---|---|
| MW-96M2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 38.9 | 28.9 | 05/31/2011 |
| MW-97M2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 2.2 | -7.8 | 06/02/2011 |
| MW-98M1 | N1 | ND for 1 Analytes | Perchlorate | SW6850 | ND | U | ND | 41.4 | 31.4 | 06/15/2011 |
| MW-98M1 | N1 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | RDX | SW8330 | 0.56 | | 0.20 | 41.4 | 31.4 | 06/15/2011 |
| MW-98M1 | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 41.4 | 31.4 | 06/15/2011 |
| MW-99S | N1 | Perchlorate | PCATE | SW6850 | 0.35 | | 0.20 | 69.2 | 59.2 | 06/14/2011 |
| MW-99S | N1 | Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine | HMX | SW8330 | 0.085 | J | 0.20 | 69.2 | 59.2 | 06/14/2011 |
| MW-99S | N1 | ND for 18 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 69.2 | 59.2 | 06/14/2011 |
| OW-2 | N1 | Perchlorate | PCATE | SW6850 | 0.20 | | 0.20 | 17.2 | 7.2 | 11/18/2011 |
| OW-2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 17.2 | 7.2 | 11/18/2011 |
| OW-2 | N1 | Perchlorate | PCATE | SW6850 | 0.26 | | 0.20 | 17.2 | 7.2 | 06/10/2011 |
| OW-2 | N1 | ND for 19 Analytes | Explosives Excluding DNX, TNX, MNX | SW8330 | ND | U | ND | 17.2 | 7.2 | 06/10/2011 |

Notes:
N1 - normal groundwater sample
FD - field duplicate sample
J - estimated value
U - nondetect

ftbgs - feet below ground surface
ug/L - micrograms per liter (parts per billion)
N/A - not analyzed
ND - not detected
Bold values exceed respective standard

Groundwater Standards

| | | |
|---|---|---|
| PCATE | MMCL/MCP GW-1 | 2 µg/L |
| RDX | USEPA Risk Based Limit | 0.61 µg/L |
| HMX | USEPA Health Advisory Limit | 200 µg/L |
| TNT | USEPA Risk Based Limit | 30 µg/L |
| 2A-DNT | USEPA Risk Based Limit | 30 µg/L |
| 4A-DNT | USEPA Risk Based Limit | 30 µg/L |

**Table 4-1**
**Approved Changes to Groundwater Monitoring Program**
**Central Impact Area**

| Well | Current Explosives Frequency (a. b) | Recommended Explosives Frequency (a, b) | Rationale For Explosives Sampling Reduction | Current Perchlorate Frequency (a, b) | Recommended Perchlorate Frequency (a, b) | Rationale For Perchlorate Sampling Reduction |
|---|---|---|---|---|---|---|
| 58MW0007B | N/A | N/A | N/C | S | Discontinue | Well is part of AFCEE's CS-19 plume. |
| 58MW0009C | N/A | N/A | N/C | S | Discontinue | Well is part of AFCEE's CS-19 plume. |
| 58MW0011D | A | Discontinue | Well is part of AFCEE's CS-19 plume. | N/A | N/A | N/C |
| 58MW0015A | N/A | N/A | N/C | S | Discontinue | Well is part of AFCEE's CS-19 plume. |
| 58MW0016A | S | Discontinue | Well is part of AFCEE's CS-19 plume. | N/A | N/A | N/C |
| 58MW0017B | N/A | N/A | N/C | A | Discontinue | Well is part of AFCEE's CS-19 plume. |
| MW-01M2 | S | A | RDX concentrations variable and declining since historic high 11 µg/L in 2001 to 1.62 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-01S | A | A | N/C | N/A | N/A | N/C |
| MW-02M1 | N/A | N/A | N/C | S | Discontinue | Perchlorate concentrations decreased from historic high of 1.4 µg/L in 2006 to 0.34 µg/L in 2011 - no known upgradient plume. |
| MW-02M2 | S | A | RDX concentrations decreased from historic high of 13 µg/L in 1999 to 0.68 µg/L in 2011 - annual data adequate to monitor trend. | A | Discontinue | ND perchlorate concentrations for 14 of 17 samples since 2001 and maximum measured 0.38J µg/L - no known upgradient plume. |
| MW-03M2 | A | A | N/C | A | Discontinue | ND perchlorate concentrations for 7 of 8 samples since 2003 and maximum measured 0.04J µg/L - no known upgradient plume. |
| MW-100M1 | S | A | RDX concentrations variable and between 1 µg/L and 3 µg/L in 24 samples collected since 2002 - annual data adequate to monitor trend. | S | Discontinue | Perchlorate concentrations decreased from historic high of 1.67J µg/L in 2001 to 0.13J µg/L in 2011 - no known upgradient plume. |
| MW-100M2 | N/A | N/A | N/C | S | Discontinue | Perchlorate concentrations decreased from historic high of 1.3 µg/L in 2004 to 0.096J µg/L in 2011 - no known upgradient plume. |
| MW-101M1 | A | A | N/C | N/A | N/A | N/C |
| MW-101S | N/A | N/A | N/C | A | Discontinue | ND perchlorate concentrations for 19 of 22 samples since 2001 and maximum measured 0.63J µg/L - no known upgradient plume. |
| MW-102M2 | S | A | ND RDX concentrations for 10 consecutive samples since 2007 - annual data adequate to monitor trend. | S | A | ND perchlorate concentrations for 16 of 24 samples since 2002 and maximum measured 0.50J µg/L - no known upgradient plume. |
| MW-105M1 | S | A | RDX concentrations variable and between 0.39 µg/L and 5.9 µg/L in 29 samples collected since 2000 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-106M1 | S | A | Ahead of upgradient RDX plume leading edge and ND RDX concentrations for 20 consecutive samples since 2000 - annual data adequate to monitor trend. | A | Discontinue | ND perchlorate concentrations for 9 of 19 samples since 2002 and maximum measured 0.97 µg/L - no known upgradient plume. |
| MW-107M1 | N/A | N/A | N/C | A | Discontinue | ND perchlorate concentrations for 16 of 21 samples since 2001 and maximum measured 1.39J µg/L in 2001 - no known upgradient plume. |
| MW-107M2 | A | A | N/C | A | Discontinue | Perchlorate concentrations decreased from historic high of 1.5 µg/L in 2005 to ND in 2011 - no known upgradient plume. |

**Table 4-1**
**Approved Changes to Groundwater Monitoring Program**
**Central Impact Area**

| Well | Current Explosives Frequency (a. b) | Recommended Explosives Frequency (a, b) | Rationale For Explosives Sampling Reduction | Current Perchlorate Frequency (a, b) | Recommended Perchlorate Frequency (a, b) | Rationale For Perchlorate Sampling Reduction |
|---|---|---|---|---|---|---|
| MW-108D | N/A | N/A | N/C | S | Discontinue | ND perchlorate concentrations for 22 of 23 samples since 2002 and maximum measured 0.64J µg/L - no known upgradient plume. |
| MW-108M1 | N/A | N/A | N/C | S | A | ND perchlorate concentrations for 19 of 25 samples since 2001 and maximum measured 0.379J µg/L - downgradient of known perchlorate plume. |
| MW-108M4 | N/A | N/A | N/C | S | A | ND perchlorate concentrations for 18 of 22 samples since 2001 and maximum measured 0.19J µg/L - screen too shallow to monitor known upgradient plume. |
| MW-110M2 | S | Discontinue | Well is peripheral to AFCEE's CS-19 plume. | N/A | N/A | N/C |
| MW-111M1 | N/A | N/A | N/C | S | Discontinue | Well is peripheral to AFCEE's CS-19 plume. |
| MW-111M2 | A | Discontinue | Well is peripheral to AFCEE's CS-19 plume. | A | Discontinue | Well is peripheral to AFCEE's CS-19 plume. |
| MW-112M1 | A | Discontinue | RDX concentrations less than 0.6 µg/L for 10 consecutive samples since 2004 - contamination better represented by MW112M2. With no clearly identified upgradient RDX source, sampling only the historically contaminated of the MW-112 cluster is more appropriate. | N/A | N/A | N/C |
| MW-112M2 | S | A | RDX concentrations variable and less than 2.5 µg/L in 28 samples collected since 2000 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-113M2 | S | A | RDX concentrations decreased from historic high of 15 µg/L in 2001 to 1.44 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-115M1 | A | Discontinue | ND RDX concentrations for 13 consecutive samples since 2001 and no known upgradient plume - MW37M2 downgradient is in program. | N/A | N/A | N/C |
| MW-123M1 | S | S | N/C | N/A | N/A | N/C |
| MW-123M2 | S | S | N/C | N/A | N/A | N/C |
| MW-135M2 | A | Discontinue | RDX concentrations decreased from historic high of 1.4 µg/L in 2001 to ND in 2011 - nearest upgradient plumelet is 3,000 feet away with historic maximum concentration of 1.8 µg/L. | N/A | N/A | N/C |
| MW-141M1 | N/A | N/A | N/C | S | Discontinue | ND perchlorate concentrations for 15 of 19 samples since 2002 and maximum measured 0.17J µg/L - no known upgradient plume. |
| MW-141M2 | N/A | N/A | N/C | S | Discontinue | Perchlorate concentrations decreased from historic high of 1.5 µg/L in 2002 to 0.23 µg/L in 2011 - no known upgradient plume. |
| MW-149M1 | A | A | N/C | N/A | N/A | N/C |
| MW-176M1 | S | S | N/C | N/A | N/A | N/C |
| MW-178M1 | S | A | Variable and declining RDX concentrations since historic high of 5 µg/L in 2005 to 1.85 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |

**Table 4-1**
**Approved Changes to Groundwater Monitoring Program**
**Central Impact Area**

| Well | Current Explosives Frequency (a. b) | Recommended Explosives Frequency (a, b) | Rationale For Explosives Sampling Reduction | Current Perchlorate Frequency (a, b) | Recommended Perchlorate Frequency (a, b) | Rationale For Perchlorate Sampling Reduction |
|---|---|---|---|---|---|---|
| MW-179M1 | A | A | N/C | S | Discontinue | Perchlorate concentrations decreased from historic high of 1.4 µg/L in 2003 to 0.11J µg/L in 2011 - no known upgradient plume. |
| MW-180M3 | S | A | ND RDX concentrations for 23 consecutive samples since 2002 and only side gradient of plume - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-183M1 | S | Discontinue | Well is part of AFCEE's CS-19 plume. | N/A | N/A | N/C |
| MW-183M2 | S | Discontinue | Well is part of AFCEE's CS-19 plume. | N/A | N/A | N/C |
| MW-184M1 | S | A | RDX concentrations decreased from historic high of 24 µg/L in 2003 to 10 µg/L in 2006 and variable and between 5 µg/L and 10 µg/L since then - annual data adequate to monitor trend. | S | A | Perchlorate concentrations increased from historic low of 0.46 µg/L in 2006 to historic high of 1.2 µg/L in 2011 - annual data adequate to monitor trend. |
| MW-184M2 | N/A | N/A | N/C | S | Discontinue | ND perchlorate concentrations for 19 of 22 samples since 2002 and maximum measured 0.054J µg/L - no known upgradient plume. |
| MW-201M2 | S | Discontinue | Well is part of AFCEE's CS-19 plume. | N/A | N/A | N/C |
| MW-202M1 | A | A | N/C | N/A | N/A | N/C |
| MW-203M2 | S | A | RDX concentrations variable and between recently measured 0.21 µg/L and 2.9 µg/L in 20 samples collected since 2003 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-204M1 | S | A | RDX concentrations decreased from historic high of 9.9J µg/L in 2004 to 0.23 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-204M2 | S | A | RDX concentrations variable and between ND and 2.8 µg/L in 20 samples collected since 2003 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-207M1 | S | A | RDX concentrations decreased from historic high of 18 µg/L in 2002 to 5.32 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-208M1 | S | A | ND RDX concentrations for 20 consecutive samples since 2002 and only side gradient of plume - annual data adequate to monitor trend. | S | A | ND perchlorate concentrations for 19 of 21 samples since 2002 and maximum measured 0.44J µg/L - no known upgradient plume. |
| MW-209M1 | S | A | Increasing and variable RDX concentrations from historic low of 2.4 µg/L in 2002 to 7.42 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-209M2 | N/A | N/A | N/C | S | A | Perchlorate concentrations increased from historic low of 0.36J µg/L in 2006 to 1.27 µg/L in 2011 and downgradient of known upgradient plume - annual data adequate to monitor trend. |
| MW-212M1 | S | A | ND RDX concentrations for 23 consecutive samples since 2002 and only side gradient of plume - annual data adequate to monitor trend. | N/A | N/A | N/C |

**Table 4-1**
**Approved Changes to Groundwater Monitoring Program**
**Central Impact Area**

| Well | Current Explosives Frequency (a. b) | Recommended Explosives Frequency (a, b) | Rationale For Explosives Sampling Reduction | Current Perchlorate Frequency (a, b) | Recommended Perchlorate Frequency (a, b) | Rationale For Perchlorate Sampling Reduction |
|---|---|---|---|---|---|---|
| MW-223M1 | S | S | N/C | S | Discontinue | ND perchlorate concentrations for 17 of 23 samples since 2002 and maximum measured 0.62J µg/L - monitoring maintained by upgradient MW23M1. |
| MW-223M2 | S | S | N/C | N/A | N/A | N/C |
| MW-235M1 | S | A | RDX concentrations decreased from historic high of 45 µg/L in 2006 to 0.78 µg/L in 2011 and upgradient of main plume - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-23M1 | S | S | N/C | S | A | Perchlorate concentrations increased from historic low of 0.1J µg/L in 2009 to 0.38 µg/L in 2011 and downgradient of known upgradient plume - annual data adequate to monitor trend. |
| MW-249M2 | S | A | RDX concentrations decreased from historic high of 1.6 µg/L in 2004 to 0.44 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-25 | S | A | RDX concentrations variable and between ND and 2 µg/L in 24 samples collected since 1999 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-27 | A | A | N/C | N/A | N/A | N/C |
| MW-37M2 | A | A | N/C | N/A | N/A | N/C |
| MW-38M3 | S | A | RDX concentrations decreased from historic high of 3 µg/L in 1999 to 0.68 µg/L in 2011 - annual data adequate to monitor trend. | S | A | Perchlorate concentrations increased from 1.0 µg/L in 2003 to 3.8 µg/L in 2007 and then decreased to 0.96 µg/L in 2011 - annual data adequate to monitor trend. |
| MW-38M4 | S | A | RDX concentrations variable and between ND and 2.4 µg/L in 33 samples collected since 1999 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-39M1 | N/A | N/A | N/C | N/A | A | More appropriate elevation for measuring perchlorate plume than MW-39M2. |
| MW-39M2 | N/A | N/A | N/C | A | Discontinue | N/C |
| MW-40S | A | A | N/C | N/A | N/A | N/C |
| MW-42M2 | S | A | ND RDX concentrations for 33 consecutive samples since 1999 and only side gradient of plume - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-42M3 | S | A | ND RDX concentrations for 31 consecutive samples since 1999 and only side gradient of plume - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-43M2 | S | A | RDX concentrations decreased from historic high of 7.3 µg/L in 2006 to 0.6 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-44M1 | A | A | N/C | A | Discontinue | Perchlorate concentrations variable and between 0.40 µg/L and 1.3 µg/L in 15 samples collected since 2002 - no known upgradient plume. |

**Table 4-1**
**Approved Changes to Groundwater Monitoring Program**
**Central Impact Area**

| Well | Current Explosives Frequency (a. b) | Recommended Explosives Frequency (a, b) | Rationale For Explosives Sampling Reduction | Current Perchlorate Frequency (a, b) | Recommended Perchlorate Frequency (a, b) | Rationale For Perchlorate Sampling Reduction |
|---|---|---|---|---|---|---|
| MW-477M1 | A | A | N/C | A | Discontinue | Perchlorate concentrations decreased from 0.82 µg/L in 2007 to ND in 2011 - no known upgradient plume. |
| MW-477M2 | A | A | N/C | A | Discontinue | ND perchlorate concentrations for 6 of 7 samples since 2007 and maximum measured 0.05J µg/L - no known upgradient plume. |
| MW-485M1 | A | A | N/C | N/A | N/A | N/C |
| MW-486M1 | A | A | N/C | N/A | N/A | N/C |
| MW-487M2 | A | A | N/C | A | Discontinue | Perchlorate concentrations variable and between 0.53J µg/L and 0.99 µg/L in 7 samples collected since 2007 - no known upgradient plume. |
| MW-50D | A | Discontinue | ND RDX concentrations for 25 of 28 samples since 1999 (maximum 0.52J µg/L) and ND since 2007 - no upgradient plume. | N/A | N/A | N/C |
| MW-50M2 | N/A | N/A | N/C | S | Discontinue | ND perchlorate concentrations for 14 of 19 samples since 2002 and maximum measured 0.18J µg/L - no known upgradient plume. |
| MW-51M2 | A | A | N/C | N/A | N/A | N/C |
| MW-59S | A | Discontinue | RDX concentrations less than 0.6 µg/L for 8 of 9 samples since 2003 and 0.64 µg/L in 2008 - no upgradient plume at screen elevation. | N/A | N/A | N/C |
| MW-85M1 | S | Discontinue | RDX concentrations decreased from historic high of 29 µg/L in 2000 to ND in 2011 - no known immediately upgradient plume. | A | Discontinue | ND perchlorate concentrations for 19 of 21 samples since 2001 and maximum measured 0.5J µg/L - no known upgradient plume. |
| MW-86M1 | N/A | N/A | N/C | S | Discontinue | Perchlorate concentrations increased from 0.44J µg/L in 2003 to 1.6 µg/L in 2009 and then decreased to 0.58 µg/L in 2011 - no known upgradient plume. |
| MW-86M2 | S | A | RDX concentrations decreased from historic high of 3 µg/L in 2001 to 0.37 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-86S | S | A | RDX concentrations variable and declining since historic high of 4.7J µg/L in 2002 to 1.05 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-87M1 | S | A | RDX concentrations decreased from historic high of 6.5J µg/L in 2000 to 0.89 µg/L in 2011 - annual data adequate to monitor trend. | S | A | Perchlorate concentrations increased from historic low of 0.67J µg/L in 2004 to 5.69 µg/L in 2011 and near southwest edge of known plume - annual data adequate to monitor trend. |
| MW-88M2 | S | A | RDX concentrations decreased from historic high of 7.7 µg/L in 2000 to 1.79 µg/L in 2011 - annual data adequate to monitor trend. | S | A | Perchlorate concentrations increased from historic low of 0.505J µg/L in 2004 to 5.46 µg/L in 2011 and in center of known plume - annual data adequate to monitor trend. |
| MW-88M3 | N/A | N/A | N/C | S | Discontinue | ND perchlorate concentrations for 9 of 12 samples since 2002 and maximum measured 0.12J µg/L - screen to shallow to monitor center known plume. |
| MW-89M2 | S | S | N/C | A | A | N/C |

**Table 4-1**
**Approved Changes to Groundwater Monitoring Program**
**Central Impact Area**

| Well | Current Explosives Frequency (a. b) | Recommended Explosives Frequency (a, b) | Rationale For Explosives Sampling Reduction | Current Perchlorate Frequency (a, b) | Recommended Perchlorate Frequency (a, b) | Rationale For Perchlorate Sampling Reduction |
|---|---|---|---|---|---|---|
| MW-89M3 | A | A | N/C | N/A | N/A | N/C |
| MW-90S | A | A | N/C | A | Discontinue | ND perchlorate concentrations for 17 of 20 samples since 2001 and maximum measured 0.52J µg/L - no known upgradient plume. |
| MW-91M1 | S | A | RDX concentrations decreased from historic high of 18 µg/L in 2000 to 2.08 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-91S | A | A | N/C | A | Discontinue | Perchlorate concentrations decreased from historic high of 5J µg/L in 2001 to ND in 2011 - no known upgradient plume. |
| MW-93M1 | A | A | N/C | S | Discontinue | Perchlorate concentrations decreased from historic high of 3J µg/L in 2001 to 0.77 in 2011 - no known upgradient plume. |
| MW-94M1 | A | Discontinue | Well is peripheral to AFCEE's CS-19 plume. | N/A | N/A | N/C |
| MW-94M2 | A | Discontinue | Well is peripheral to AFCEE's CS-19 plume. | N/A | N/A | N/C |
| MW-95M1 | S | A | RDX concentrations decreased from historic high of 6.1 µg/L in 2002 to 1.53 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-95M2 | N/A | N/A | N/C | S | A | Perchlorate concentrations decreased from historic high of 1.38 µg/L in 2004 to 0.23 in 2011 - side gradient of known plume. |
| MW-96M2 | A | A | N/C | S | Discontinue | ND perchlorate concentrations for 14 of 18 samples since 2001 and maximum measured 0.39J µg/L - no known upgradient plume. |
| MW-97M2 | S | Discontinue | ND RDX concentrations for 28 consecutive samples since 2003 and only side gradient of plume - no known immediately upgradient plume. | N/A | N/A | N/C |
| MW-98M1 | A | A | N/C | A | Discontinue | Perchlorate concentrations variable and between 0.17J µg/L and 0.54J µg/L in 20 samples collected since 2001 - no known upgradient plume. |
| MW-99S | A | A | N/C | A | Discontinue | ND perchlorate concentrations for 11 of 15 samples since 2003 and maximum measured 0.48J µg/L - no known upgradient plume. |
| OW-2 | S | A | RDX concentrations decreased from historic high of 16 µg/L in 2004 to ND in 2011 - annual data adequate to monitor trend. | S | Discontinue | Perchlorate concentrations decreased from historic high of 1.67J µg/L in 2002 to 0.2 µg/L in 2011 - no known upgradient plume. |

Notes:
ft = feet
m = meters
msl = mean sea level
N/A not applicable
N/C = No recommended change

(a)
A = annually
S = semi-annually

(b)
Explosives = EPA Method SW846-8330
Perchlorate = EPA Method SW846-6850

# AppendixA

# Historic Water Quality Data

# [included on CD only]

# Table A1
# Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| 58MW0007B | N | 1/11/2002 | E314.0 | 0.53 J |
| 58MW0007B | N | 6/4/2002 | E314.0 | 0.92 J |
| 58MW0007B | N | 8/26/2002 | E314.0 | 1 U |
| 58MW0007B | FD | 8/26/2002 | E314.0 | 1 U |
| 58MW0007B | N | 12/4/2002 | E314.0 | 0.67 J |
| 58MW0007B | N | 7/3/2003 | E314.0 | 0.58 J |
| 58MW0007B | N | 11/24/2003 | E314.0 | 0.73 J |
| 58MW0007B | N | 3/15/2004 | E314.0 | 0.65 J |
| 58MW0007B | N | 5/4/2004 | E314.0 | 0.55 J |
| 58MW0007B | N | 8/18/2004 | E314.0 | 0.45 J |
| 58MW0007B | N | 3/16/2005 | E314.0 | 0.62 J |
| 58MW0007B | N | 5/18/2005 | E314.0 | 0.75 J |
| 58MW0007B | N | 9/28/2005 | E314.0 | 0.58 J |
| 58MW0007B | N | 1/11/2006 | E314.0 | 0.88 J |
| 58MW0007B | FD | 1/11/2006 | E314.0 | 0.63 J |
| 58MW0007B | N | 5/9/2007 | E314.0 | 0.69 J |
| 58MW0007B | FD | 5/9/2007 | E314.0 | 0.62 J |
| 58MW0007B | N | 10/22/2007 | E314.0 | 0.63 J |
| 58MW0007B | N | 5/30/2008 | SW6850 | 0.87 J |
| 58MW0007B | N | 12/9/2008 | E314.0 | 1 U |
| 58MW0007B | N | 6/15/2009 | SW6850 | 0.47 |
| 58MW0007B | N | 12/15/2009 | SW6850 | 0.41 |
| 58MW0007B | N | 6/30/2010 | SW6850 | 0.48 |
| 58MW0007B | N | 12/7/2010 | SW6850 | 0.38 |
| 58MW0007B | N | 6/7/2011 | SW6850 | 0.5 |
| 58MW0007B | N | 11/29/2011 | SW6850 | 0.42 |
| 58MW0009C | N | 6/4/2002 | E314.0 | 1.5 |
| 58MW0009C | N | 8/26/2002 | E314.0 | 1.9 |
| 58MW0009C | N | 12/9/2002 | E314.0 | 1.3 |
| 58MW0009C | N | 7/3/2003 | E314.0 | 1.6 |
| 58MW0009C | FD | 7/3/2003 | E314.0 | 1.6 |
| 58MW0009C | N | 11/14/2003 | E314.0 | 1.5 J |
| 58MW0009C | N | 3/5/2004 | E314.0 | 1.6 J |
| 58MW0009C | N | 7/20/2004 | E314.0 | 1.2 |
| 58MW0009C | N | 8/16/2004 | E314.0 | 1.7 J |
| 58MW0009C | N | 3/11/2005 | E314.0 | 2.2 |
| 58MW0009C | N | 5/19/2005 | E314.0 | 2.5 J |
| 58MW0009C | N | 11/1/2005 | E314.0 | 1.8 |
| 58MW0009C | N | 1/11/2006 | E314.0 | 2.1 |
| 58MW0009C | N | 5/10/2007 | E314.0 | 1.5 |
| 58MW0009C | N | 10/22/2007 | E314.0 | 1.4 |
| 58MW0009C | N | 5/21/2008 | E314.0 | 1.5 |
| 58MW0009C | N | 11/18/2008 | SW6850 | 1.4 |
| 58MW0009C | N | 6/26/2009 | SW6850 | 1.3 |
| 58MW0009C | FD | 12/15/2009 | SW6850 | 0.92 |
| 58MW0009C | N | 12/15/2009 | SW6850 | 0.92 |
| 58MW0009C | N | 6/29/2010 | SW6850 | 0.79 |

# Table A1
# Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| 58MW0009C | N | 11/22/2010 | SW6850 | 0.85 |
| 58MW0009C | N | 6/3/2011 | SW6850 | 0.72 |
| 58MW0009C | N | 11/29/2011 | SW6850 | 0.49 |
| 58MW0015A | FD | 8/27/2002 | E314.0 | 1.8 |
| 58MW0015A | N | 8/27/2002 | E314.0 | 2 |
| 58MW0015A | N | 2/5/2003 | E314.0 | 2.5 J |
| 58MW0015A | N | 5/9/2003 | E314.0 | 2.2 |
| 58MW0015A | N | 10/9/2003 | E314.0 | 1 U |
| 58MW0015A | N | 3/8/2004 | E314.0 | 1.5 |
| 58MW0015A | N | 5/6/2004 | E314.0 | 2.1 J |
| 58MW0015A | N | 11/8/2004 | E314.0 | 1.5 |
| 58MW0015A | N | 4/26/2005 | E314.0 | 1.2 J |
| 58MW0015A | N | 9/2/2005 | E314.0 | 1.7 |
| 58MW0015A | N | 1/20/2006 | E314.0 | 1.2 |
| 58MW0015A | N | 11/28/2006 | E314.0 | 0.96 J |
| 58MW0015A | N | 5/10/2007 | E314.0 | 0.88 J |
| 58MW0015A | N | 11/27/2007 | E314.0 | 0.83 J |
| 58MW0015A | N | 6/4/2008 | SW6850 | 0.84 J |
| 58MW0015A | N | 6/4/2008 | SW6850 | 0.87 J |
| 58MW0015A | N | 11/17/2008 | SW6850 | 0.76 J |
| 58MW0015A | FD | 11/17/2008 | SW6850 | 0.74 J |
| 58MW0015A | N | 6/26/2009 | SW6850 | 0.65 |
| 58MW0015A | N | 1/5/2010 | SW6850 | 0.48 |
| 58MW0015A | N | 6/28/2010 | SW6850 | 0.42 |
| 58MW0015A | N | 11/22/2010 | SW6850 | 0.3 |
| 58MW0015A | N | 6/3/2011 | SW6850 | 0.26 |
| 58MW0015A | N | 11/29/2011 | SW6850 | 0.21 |
| 58MW0017B | N | 5/17/2007 | E314.0 | 1.5 |
| 58MW0017B | N | 11/30/2007 | E314.0 | 1.4 |
| 58MW0017B | FD | 11/30/2007 | E314.0 | 1.3 |
| 58MW0017B | N | 5/21/2008 | E314.0 | 1.5 |
| 58MW0017B | N | 7/1/2009 | SW6850 | 1.1 |
| 58MW0017B | N | 6/30/2010 | SW6850 | 0.9 |
| 58MW0017B | N | 6/7/2011 | SW6850 | 1.04 |
| MW-02M1 | N | 8/2/2000 | E314.0 | 5 UJ |
| MW-02M1 | N | 8/21/2001 | E314.0 | 5 U |
| MW-02M1 | N | 5/1/2002 | E314.0 | 0.78 J |
| MW-02M1 | N | 9/16/2002 | E314.0 | 1.1 J |
| MW-02M1 | N | 1/16/2003 | E314.0 | 1.3 |
| MW-02M1 | N | 7/10/2003 | E314.0 | 0.99 J |
| MW-02M1 | N | 11/20/2003 | E314.0 | 1 |
| MW-02M1 | N | 2/26/2004 | E314.0 | 1.1 |
| MW-02M1 | N | 10/13/2004 | E314.0 | 1.2 J |
| MW-02M1 | N | 8/10/2005 | E314.0 | 1.2 |
| MW-02M1 | N | 4/24/2006 | E314.0 | 1.4 |
| MW-02M1 | N | 10/25/2006 | E314.0 | 1.2 |
| MW-02M1 | N | 5/7/2007 | E314.0 | 0.48 J |

# Table A1
# Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-02M1 | N | 11/14/2007 | E314.0 | 0.68 J |
| MW-02M1 | N | 5/27/2008 | SW6850 | 0.48 J |
| MW-02M1 | N | 11/14/2008 | SW6850 | 0.47 J |
| MW-02M1 | N | 6/5/2009 | SW6850 | 0.45 |
| MW-02M1 | N | 12/29/2009 | SW6850 | 0.4 |
| MW-02M1 | N | 5/27/2010 | SW6850 | 0.36 |
| MW-02M1 | N | 11/18/2010 | SW6850 | 0.38 |
| MW-02M1 | N | 6/16/2011 | SW6850 | 0.38 |
| MW-02M1 | N | 11/16/2011 | SW6850 | 0.34 |
| MW-02M2 | N | 8/2/2000 | E314.0 | 5 UJ |
| MW-02M2 | N | 8/21/2001 | E314.0 | 5 U |
| MW-02M2 | N | 5/1/2002 | E314.0 | 1 U |
| MW-02M2 | N | 9/16/2002 | E314.0 | 1 U |
| MW-02M2 | N | 7/18/2003 | E314.0 | 1 U |
| MW-02M2 | N | 11/19/2003 | E314.0 | 1 U |
| MW-02M2 | N | 2/27/2004 | E314.0 | 0.38 J |
| MW-02M2 | N | 4/26/2004 | E314.0 | 1 U |
| MW-02M2 | N | 10/13/2004 | E314.0 | 1 UJ |
| MW-02M2 | N | 5/4/2005 | E314.0 | 1 U |
| MW-02M2 | N | 8/10/2005 | E314.0 | 1 U |
| MW-02M2 | N | 4/24/2006 | E314.0 | 1 U |
| MW-02M2 | N | 5/7/2007 | E314.0 | 1 U |
| MW-02M2 | N | 11/14/2007 | E314.0 | 1 U |
| MW-02M2 | N | 5/27/2008 | SW6850 | 1 U |
| MW-02M2 | N | 6/5/2009 | SW6850 | 0.11 J |
| MW-02M2 | N | 5/27/2010 | SW6850 | 0.058 J |
| MW-02M2 | N | 6/16/2011 | SW6850 | 0.2 U |
| MW-03M2 | FD | 5/9/2003 | E314.0 | 1 U |
| MW-03M2 | N | 5/9/2003 | E314.0 | 1 U |
| MW-03M2 | N | 10/6/2004 | E314.0 | 1 UJ |
| MW-03M2 | N | 8/12/2005 | E314.0 | 1 U |
| MW-03M2 | N | 4/20/2006 | E314.0 | 1 U |
| MW-03M2 | FD | 4/20/2006 | E314.0 | 1 U |
| MW-03M2 | N | 5/29/2007 | E314.0 | 1 U |
| MW-03M2 | N | 5/19/2008 | E314.0 | 1 U |
| MW-03M2 | N | 6/25/2009 | SW6850 | 0.2 U |
| MW-03M2 | N | 6/7/2010 | SW6850 | 0.04 J |
| MW-03M2 | N | 6/16/2011 | SW6850 | 0.2 U |
| MW-100M1 | N | 1/27/2001 | E314.0 | 5 U |
| MW-100M1 | FD | 10/23/2001 | E314.0 | 1.01 J |
| MW-100M1 | N | 10/23/2001 | E314.0 | 1.67 J |
| MW-100M1 | N | 11/27/2001 | E314.0 | 1.37 J |
| MW-100M1 | N | 5/21/2002 | E314.0 | 1.37 J |
| MW-100M1 | N | 9/10/2002 | E314.0 | 0.9 J |
| MW-100M1 | N | 11/21/2002 | E314.0 | 1.4 |
| MW-100M1 | N | 6/5/2003 | E314.0 | 1.1 |
| MW-100M1 | N | 10/15/2003 | E314.0 | 0.79 J |

**Table A1**
**Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program**

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-100M1 | N | 2/26/2004 | E314.0 | 0.71 J |
| MW-100M1 | N | 7/15/2004 | E314.0 | 0.57 J |
| MW-100M1 | N | 9/24/2004 | E314.0 | 0.68 J |
| MW-100M1 | N | 1/11/2005 | E314.0 | 0.53 J |
| MW-100M1 | N | 5/20/2005 | E314.0 | 0.53 J |
| MW-100M1 | FD | 5/20/2005 | E314.0 | 0.62 J |
| MW-100M1 | N | 8/22/2005 | E314.0 | 0.41 J |
| MW-100M1 | N | 1/23/2006 | E314.0 | 1 U |
| MW-100M1 | N | 4/19/2006 | E314.0 | 0.36 J |
| MW-100M1 | N | 11/15/2006 | E314.0 | 1 U |
| MW-100M1 | N | 5/18/2007 | E314.0 | 1 U |
| MW-100M1 | N | 5/20/2008 | E314.0 | 0.35 J |
| MW-100M1 | N | 11/12/2008 | SW6850 | 1 U |
| MW-100M1 | N | 6/5/2009 | SW6850 | 0.19 J |
| MW-100M1 | N | 12/22/2009 | SW6850 | 0.17 J |
| MW-100M1 | N | 12/22/2009 | SW6850 | 0.18 J |
| MW-100M1 | N | 12/22/2009 | SW6850 | 0.17 J |
| MW-100M1 | N | 12/22/2009 | SW6850 | 0.18 J |
| MW-100M1 | N | 5/27/2010 | SW6850 | 0.18 J |
| MW-100M1 | N | 11/18/2010 | SW6850 | 0.2 U |
| MW-100M1 | N | 6/14/2011 | SW6850 | 0.2 U |
| MW-100M1 | N | 11/15/2011 | SW6850 | 0.13 J |
| MW-100M2 | FD | 1/27/2001 | E314.0 | 5 U |
| MW-100M2 | N | 1/27/2001 | E314.0 | 5 U |
| MW-100M2 | N | 11/15/2001 | E314.0 | 0.79 J |
| MW-100M2 | N | 11/27/2001 | E314.0 | 0.75 J |
| MW-100M2 | FD | 11/27/2001 | E314.0 | 0.83 J |
| MW-100M2 | N | 5/21/2002 | E314.0 | 0.44 J |
| MW-100M2 | N | 9/10/2002 | E314.0 | 0.75 J |
| MW-100M2 | N | 11/21/2002 | E314.0 | 0.64 J |
| MW-100M2 | N | 6/6/2003 | E314.0 | 0.73 J |
| MW-100M2 | N | 10/15/2003 | E314.0 | 1.3 J |
| MW-100M2 | N | 2/26/2004 | E314.0 | 1.3 |
| MW-100M2 | N | 9/24/2004 | E314.0 | 1 |
| MW-100M2 | N | 8/22/2005 | E314.0 | 0.63 J |
| MW-100M2 | N | 4/19/2006 | E314.0 | 0.47 J |
| MW-100M2 | N | 11/15/2006 | E314.0 | 1 U |
| MW-100M2 | N | 5/18/2007 | E314.0 | 0.4 J |
| MW-100M2 | N | 12/5/2007 | E314.0 | 1 U |
| MW-100M2 | N | 5/20/2008 | E314.0 | 1 U |
| MW-100M2 | N | 11/12/2008 | SW6850 | 1 U |
| MW-100M2 | N | 6/5/2009 | SW6850 | 0.12 J |
| MW-100M2 | N | 12/16/2009 | SW6850 | 0.082 J |
| MW-100M2 | N | 5/27/2010 | SW6850 | 0.1 J |
| MW-100M2 | N | 11/18/2010 | SW6850 | 0.2 U |
| MW-100M2 | N | 6/14/2011 | SW6850 | 0.2 U |
| MW-100M2 | N | 11/16/2011 | SW6850 | 0.096 J |

# Table A1
# Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-101S | N | 1/20/2001 | E314.0 | 5 UJ |
| MW-101S | N | 10/5/2001 | E314.0 | 5 U |
| MW-101S | N | 10/23/2001 | E314.0 | 5 U |
| MW-101S | N | 11/28/2001 | E314.0 | 0.63 J |
| MW-101S | N | 5/21/2002 | E314.0 | 1 UJ |
| MW-101S | N | 9/19/2002 | E314.0 | 1 U |
| MW-101S | N | 11/21/2002 | E314.0 | 1 U |
| MW-101S | N | 5/16/2003 | E314.0 | 1 U |
| MW-101S | N | 11/14/2003 | E314.0 | 1 U |
| MW-101S | N | 2/26/2004 | E314.0 | 1 U |
| MW-101S | N | 5/5/2004 | E314.0 | 1 U |
| MW-101S | N | 9/24/2004 | E314.0 | 1 U |
| MW-101S | N | 12/21/2004 | E314.0 | 1 U |
| MW-101S | N | 4/29/2005 | E314.0 | 1 UJ |
| MW-101S | N | 10/3/2005 | E314.0 | 1 U |
| MW-101S | N | 1/20/2006 | E314.0 | 1 U |
| MW-101S | N | 11/15/2006 | E314.0 | 1 U |
| MW-101S | N | 6/12/2007 | E331.0 | 1 U |
| MW-101S | N | 5/22/2008 | E314.0 | 1 U |
| MW-101S | N | 6/24/2009 | SW6850 | 0.088 J |
| MW-101S | N | 5/27/2010 | SW6850 | 0.044 J |
| MW-101S | N | 6/9/2011 | SW6850 | 0.2 U |
| MW-102M2 | N | 6/7/2002 | E314.0 | 1 U |
| MW-102M2 | N | 9/12/2002 | E314.0 | 0.5 J |
| MW-102M2 | N | 1/13/2003 | E314.0 | 1 U |
| MW-102M2 | N | 4/28/2003 | E314.0 | 1 UJ |
| MW-102M2 | N | 10/7/2003 | E314.0 | 1 U |
| MW-102M2 | N | 12/31/2003 | E314.0 | 1 UJ |
| MW-102M2 | N | 7/1/2004 | E314.0 | 1 U |
| MW-102M2 | N | 9/29/2004 | E314.0 | 1 UJ |
| MW-102M2 | N | 11/16/2004 | E314.0 | 1 UJ |
| MW-102M2 | N | 4/29/2005 | E314.0 | 1 U |
| MW-102M2 | N | 8/1/2005 | E314.0 | 1 U |
| MW-102M2 | N | 12/7/2005 | E314.0 | 1 U |
| MW-102M2 | N | 4/24/2006 | E314.0 | 1 U |
| MW-102M2 | N | 10/26/2006 | E314.0 | 1 U |
| MW-102M2 | N | 5/15/2007 | E314.0 | 1 U |
| MW-102M2 | N | 10/24/2007 | E314.0 | 1 U |
| MW-102M2 | N | 6/5/2008 | SW6850 | 1 U |
| MW-102M2 | N | 12/8/2008 | E314.0 | 0.44 J |
| MW-102M2 | N | 6/11/2009 | SW6850 | 0.28 |
| MW-102M2 | N | 12/8/2009 | SW6850 | 0.24 |
| MW-102M2 | N | 5/26/2010 | SW6850 | 0.26 |
| MW-102M2 | N | 11/17/2010 | SW6850 | 0.27 |
| MW-102M2 | N | 6/2/2011 | SW6850 | 0.32 |
| MW-102M2 | N | 12/6/2011 | SW6850 | 0.41 |
| MW-106M1 | N | 5/22/2002 | E314.0 | 0.61 J |

**Table A1**
**Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program**

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-106M1 | N | 8/15/2002 | E314.0 | 0.97 J |
| MW-106M1 | FD | 8/15/2002 | E314.0 | 1 U |
| MW-106M1 | N | 1/27/2003 | E314.0 | 0.46 J |
| MW-106M1 | N | 4/30/2003 | E314.0 | 0.48 J |
| MW-106M1 | N | 10/8/2003 | E314.0 | 1 U |
| MW-106M1 | N | 2/13/2004 | E314.0 | 1 U |
| MW-106M1 | N | 7/15/2004 | E314.0 | 1 U |
| MW-106M1 | N | 9/23/2004 | E314.0 | 1 U |
| MW-106M1 | N | 11/8/2004 | E314.0 | 0.48 J |
| MW-106M1 | N | 8/3/2005 | E314.0 | 1 U |
| MW-106M1 | N | 12/14/2005 | E314.0 | 1 U |
| MW-106M1 | N | 4/20/2006 | E314.0 | 1 U |
| MW-106M1 | N | 6/1/2007 | E314.0 | 1 U |
| MW-106M1 | N | 5/22/2008 | E314.0 | 0.53 J |
| MW-106M1 | N | 6/19/2009 | SW6850 | 0.23 |
| MW-106M1 | N | 10/26/2009 | SW6850 | 0.2 |
| MW-106M1 | N | 5/27/2010 | SW6850 | 0.2 |
| MW-106M1 | N | 5/23/2011 | SW6850 | 0.2 U |
| MW-106M1 | N | 12/5/2011 | SW6850 | 0.064 J |
| MW-107M1 | N | 1/27/2001 | E314.0 | 5 U |
| MW-107M1 | N | 10/10/2001 | E314.0 | 5 U |
| MW-107M1 | N | 11/29/2001 | E314.0 | 1.39 J |
| MW-107M1 | N | 5/22/2002 | E314.0 | 1 UJ |
| MW-107M1 | N | 9/12/2002 | E314.0 | 0.49 J |
| MW-107M1 | N | 11/22/2002 | E314.0 | 1 U |
| MW-107M1 | N | 4/8/2003 | E314.0 | 1 U |
| MW-107M1 | N | 11/10/2003 | E314.0 | 1 U |
| MW-107M1 | N | 3/3/2004 | E314.0 | 1 U |
| MW-107M1 | N | 4/27/2004 | E314.0 | 1 U |
| MW-107M1 | N | 9/23/2004 | E314.0 | 0.38 J |
| MW-107M1 | N | 12/22/2004 | E314.0 | 1 U |
| MW-107M1 | N | 4/27/2005 | E314.0 | 1 U |
| MW-107M1 | N | 9/12/2005 | E314.0 | 1 U |
| MW-107M1 | N | 12/14/2005 | E314.0 | 1 U |
| MW-107M1 | N | 4/24/2006 | E314.0 | 1 U |
| MW-107M1 | N | 5/31/2007 | E314.0 | 1 U |
| MW-107M1 | N | 5/23/2008 | E314.0 | 1 U |
| MW-107M1 | N | 6/23/2009 | SW6850 | 0.091 J |
| MW-107M1 | N | 6/24/2010 | SW6850 | 0.075 J |
| MW-107M1 | N | 6/10/2011 | SW6850 | 0.2 U |
| MW-107M2 | FD | 1/27/2001 | E314.0 | 5 U |
| MW-107M2 | N | 1/27/2001 | E314.0 | 5 U |
| MW-107M2 | N | 10/22/2001 | E314.0 | 5 U |
| MW-107M2 | FD | 11/29/2001 | E314.0 | 2 U |
| MW-107M2 | N | 11/29/2001 | E314.0 | 2 U |
| MW-107M2 | N | 5/22/2002 | E314.0 | 1 UJ |
| MW-107M2 | N | 9/12/2002 | E314.0 | 1 U |

**Table A1**
**Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program**

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-107M2 | N | 11/22/2002 | E314.0 | 1 U |
| MW-107M2 | N | 4/9/2003 | E314.0 | 1 U |
| MW-107M2 | N | 11/10/2003 | E314.0 | 1 U |
| MW-107M2 | N | 3/2/2004 | E314.0 | 1 U |
| MW-107M2 | N | 4/26/2004 | E314.0 | 1 U |
| MW-107M2 | N | 9/23/2004 | E314.0 | 1 U |
| MW-107M2 | N | 12/21/2004 | E314.0 | 1 U |
| MW-107M2 | FD | 4/27/2005 | E314.0 | 0.97 J |
| MW-107M2 | N | 4/27/2005 | E314.0 | 0.81 J |
| MW-107M2 | N | 9/12/2005 | E314.0 | 1.5 |
| MW-107M2 | N | 12/14/2005 | E314.0 | 0.91 J |
| MW-107M2 | N | 4/24/2006 | E314.0 | 1 |
| MW-107M2 | FD | 5/31/2007 | E314.0 | 0.7 J |
| MW-107M2 | N | 5/31/2007 | E314.0 | 0.75 J |
| MW-107M2 | N | 5/23/2008 | E314.0 | 0.37 J |
| MW-107M2 | FD | 5/23/2008 | E314.0 | 0.35 J |
| MW-107M2 | N | 6/23/2009 | SW6850 | 0.051 J |
| MW-107M2 | N | 6/24/2010 | SW6850 | 0.057 J |
| MW-107M2 | N | 6/10/2011 | SW6850 | 0.2 U |
| MW-108D | N | 6/7/2002 | E314.0 | 1 U |
| MW-108D | N | 9/13/2002 | E314.0 | 0.64 J |
| MW-108D | FD | 9/13/2002 | E314.0 | 1 U |
| MW-108D | N | 6/12/2003 | E314.0 | 1 U |
| MW-108D | N | 10/31/2003 | E314.0 | 1 U |
| MW-108D | N | 1/29/2004 | E314.0 | 1 U |
| MW-108D | N | 6/21/2004 | E314.0 | 1 U |
| MW-108D | N | 8/11/2004 | E314.0 | 1 UJ |
| MW-108D | FD | 8/11/2004 | E314.0 | 1 UJ |
| MW-108D | N | 11/16/2004 | E314.0 | 1 UJ |
| MW-108D | N | 5/9/2005 | E314.0 | 1 U |
| MW-108D | N | 8/2/2005 | E314.0 | 1 U |
| MW-108D | N | 12/7/2005 | E314.0 | 1 U |
| MW-108D | N | 4/13/2006 | E314.0 | 1 U |
| MW-108D | N | 10/12/2006 | E314.0 | 1 U |
| MW-108D | N | 5/25/2007 | E314.0 | 1 U |
| MW-108D | N | 11/9/2007 | E314.0 | 1 U |
| MW-108D | N | 6/5/2008 | SW6850 | 1 U |
| MW-108D | N | 11/21/2008 | SW6850 | 1 U |
| MW-108D | N | 6/12/2009 | SW6850 | 0.2 U |
| MW-108D | N | 12/23/2009 | SW6850 | 0.2 U |
| MW-108D | N | 5/25/2010 | SW6850 | 0.2 U |
| MW-108D | N | 11/18/2010 | SW6850 | 0.2 U |
| MW-108D | N | 5/26/2011 | SW6850 | 0.2 U |
| MW-108D | N | 12/6/2011 | SW6850 | 0.2 U |
| MW-108M1 | N | 12/27/2001 | E314.0 | 0.379 J |
| MW-108M1 | FD | 12/27/2001 | E314.0 | 2 U |
| MW-108M1 | N | 5/1/2002 | E314.0 | 1 U |

**Table A1**
**Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program**

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-108M1 | N | 9/16/2002 | E314.0 | 1 U |
| MW-108M1 | N | 1/13/2003 | E314.0 | 1 U |
| MW-108M1 | N | 6/4/2003 | E314.0 | 1 U |
| MW-108M1 | N | 10/31/2003 | E314.0 | 1 U |
| MW-108M1 | N | 1/29/2004 | E314.0 | 1 U |
| MW-108M1 | N | 4/28/2004 | E314.0 | 1 U |
| MW-108M1 | N | 8/11/2004 | E314.0 | 1 UJ |
| MW-108M1 | N | 11/16/2004 | E314.0 | 1 UJ |
| MW-108M1 | N | 4/4/2005 | E314.0 | 1 U |
| MW-108M1 | N | 8/2/2005 | E314.0 | 1 U |
| MW-108M1 | N | 12/7/2005 | E314.0 | 1 U |
| MW-108M1 | FD | 4/13/2006 | E314.0 | 1 U |
| MW-108M1 | N | 4/13/2006 | E314.0 | 1 U |
| MW-108M1 | N | 10/12/2006 | E314.0 | 1 U |
| MW-108M1 | N | 5/25/2007 | E314.0 | 1 U |
| MW-108M1 | N | 11/9/2007 | E314.0 | 1 U |
| MW-108M1 | N | 6/5/2008 | SW6850 | 1 U |
| MW-108M1 | N | 11/21/2008 | SW6850 | 1 U |
| MW-108M1 | N | 6/12/2009 | SW6850 | 0.054 J |
| MW-108M1 | N | 12/23/2009 | SW6850 | 0.042 J |
| MW-108M1 | N | 5/25/2010 | SW6850 | 0.064 J |
| MW-108M1 | N | 11/18/2010 | SW6850 | 0.2 U |
| MW-108M1 | N | 5/26/2011 | SW6850 | 0.23 |
| MW-108M1 | N | 12/6/2011 | SW6850 | 0.22 |
| MW-108M4 | N | 12/18/2001 | E314.0 | 2 U |
| MW-108M4 | N | 5/2/2002 | E314.0 | 1 U |
| MW-108M4 | N | 9/13/2002 | E314.0 | 1 U |
| MW-108M4 | FD | 1/10/2003 | E314.0 | 1 U |
| MW-108M4 | N | 1/10/2003 | E314.0 | 1 U |
| MW-108M4 | N | 6/3/2003 | E314.0 | 1 U |
| MW-108M4 | N | 4/28/2004 | E314.0 | 1 U |
| MW-108M4 | N | 8/11/2004 | E314.0 | 1 U |
| MW-108M4 | N | 11/16/2004 | E314.0 | 1 UJ |
| MW-108M4 | N | 5/6/2005 | E314.0 | 1 U |
| MW-108M4 | N | 8/2/2005 | E314.0 | 1 U |
| MW-108M4 | N | 12/7/2005 | E314.0 | 1 U |
| MW-108M4 | N | 10/12/2006 | E314.0 | 1 U |
| MW-108M4 | N | 5/25/2007 | E314.0 | 1 U |
| MW-108M4 | N | 11/9/2007 | E314.0 | 1 U |
| MW-108M4 | N | 6/5/2008 | SW6850 | 1 U |
| MW-108M4 | N | 11/21/2008 | SW6850 | 1 U |
| MW-108M4 | N | 6/12/2009 | SW6850 | 0.19 J |
| MW-108M4 | N | 12/23/2009 | SW6850 | 0.19 J |
| MW-108M4 | N | 5/25/2010 | SW6850 | 0.14 J |
| MW-108M4 | N | 11/18/2010 | SW6850 | 0.2 U |
| MW-108M4 | N | 5/26/2011 | SW6850 | 0.2 U |
| MW-108M4 | N | 12/6/2011 | SW6850 | 0.16 J |

**Table A1**
**Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program**

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-111M1 | N | 7/1/2002 | E314.0 | 1 U |
| MW-111M1 | N | 4/10/2003 | E314.0 | 1 U |
| MW-111M1 | N | 4/27/2004 | E314.0 | 1 U |
| MW-111M1 | N | 8/16/2004 | E314.0 | 1 UJ |
| MW-111M1 | N | 5/12/2005 | E314.0 | 1 U |
| MW-111M1 | N | 8/19/2005 | E314.0 | 1 U |
| MW-111M1 | N | 10/12/2006 | E314.0 | 1 U |
| MW-111M1 | N | 5/8/2007 | E314.0 | 1 U |
| MW-111M1 | N | 10/18/2007 | E314.0 | 1 U |
| MW-111M1 | N | 6/2/2008 | SW6850 | 1 U |
| MW-111M1 | N | 11/17/2008 | SW6850 | 1 U |
| MW-111M1 | N | 6/3/2009 | SW6850 | 0.2 U |
| MW-111M1 | N | 12/30/2009 | SW6850 | 0.2 U |
| MW-111M1 | N | 6/9/2010 | SW6850 | 0.042 J |
| MW-111M1 | N | 12/7/2010 | SW6850 | 0.2 U |
| MW-111M1 | N | 6/7/2011 | SW6850 | 0.2 U |
| MW-111M1 | N | 11/30/2011 | SW6850 | 0.2 U |
| MW-111M2 | N | 7/1/2002 | E314.0 | 1 U |
| MW-111M2 | N | 4/10/2003 | E314.0 | 0.45 J |
| MW-111M2 | N | 9/19/2003 | E314.0 | 0.56 J |
| MW-111M2 | N | 7/15/2004 | E314.0 | 1 U |
| MW-111M2 | N | 8/19/2004 | E314.0 | 1 UJ |
| MW-111M2 | N | 3/7/2005 | E314.0 | 1 U |
| MW-111M2 | N | 5/12/2005 | E314.0 | 0.43 J |
| MW-111M2 | N | 8/19/2005 | E314.0 | 0.47 J |
| MW-111M2 | N | 12/28/2005 | E314.0 | 0.36 J |
| MW-111M2 | FD | 4/27/2006 | E314.0 | 1 U |
| MW-111M2 | N | 4/27/2006 | E314.0 | 1 U |
| MW-111M2 | N | 5/8/2007 | E314.0 | 1 U |
| MW-111M2 | N | 6/2/2008 | SW6850 | 0.64 J |
| MW-111M2 | N | 6/3/2009 | SW6850 | 0.61 |
| MW-111M2 | N | 6/9/2010 | SW6850 | 0.6 |
| MW-111M2 | N | 6/7/2011 | SW6850 | 0.52 |
| MW-141M1 | N | 6/12/2002 | E314.0 | 1 U |
| MW-141M1 | N | 4/16/2003 | E314.0 | 2 U |
| MW-141M1 | N | 4/28/2004 | E314.0 | 1 U |
| MW-141M1 | FD | 4/28/2004 | E314.0 | 1 U |
| MW-141M1 | N | 8/24/2004 | E314.0 | 1 UJ |
| MW-141M1 | N | 11/10/2004 | E314.0 | 1 UJ |
| MW-141M1 | N | 5/3/2005 | E314.0 | 1 U |
| MW-141M1 | N | 9/20/2005 | E314.0 | 1 U |
| MW-141M1 | N | 1/23/2006 | E314.0 | 1 U |
| MW-141M1 | N | 10/3/2006 | E314.0 | 1 U |
| MW-141M1 | N | 5/7/2007 | E314.0 | 1 U |
| MW-141M1 | N | 11/15/2007 | E314.0 | 1 U |
| MW-141M1 | N | 5/28/2008 | SW6850 | 1 U |
| MW-141M1 | N | 11/14/2008 | SW6850 | 1 U |

**Table A1**
**Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program**

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-141M1 | N | 6/3/2009 | SW6850 | 0.094 J |
| MW-141M1 | N | 12/17/2009 | SW6850 | 0.11 J |
| MW-141M1 | N | 6/30/2010 | SW6850 | 0.11 J |
| MW-141M1 | N | 11/19/2010 | SW6850 | 0.2 U |
| MW-141M1 | N | 6/22/2011 | SW6850 | 0.2 U |
| MW-141M1 | N | 11/17/2011 | SW6850 | 0.17 J |
| MW-141M2 | N | 8/12/2002 | E314.0 | 1.5 |
| MW-141M2 | N | 4/16/2003 | E314.0 | 0.99 J |
| MW-141M2 | N | 10/3/2003 | E314.0 | 0.99 J |
| MW-141M2 | N | 12/30/2003 | E314.0 | 0.919 J |
| MW-141M2 | N | 7/23/2004 | E314.0 | 0.91 J |
| MW-141M2 | N | 8/24/2004 | E314.0 | 0.78 J |
| MW-141M2 | N | 11/10/2004 | E314.0 | 0.84 J |
| MW-141M2 | FD | 5/3/2005 | E314.0 | 0.63 J |
| MW-141M2 | N | 5/3/2005 | E314.0 | 0.6 J |
| MW-141M2 | N | 9/20/2005 | E314.0 | 0.5 J |
| MW-141M2 | N | 1/23/2006 | E314.0 | 0.53 J |
| MW-141M2 | N | 5/3/2006 | E314.0 | 1 U |
| MW-141M2 | N | 11/16/2006 | E314.0 | 1 U |
| MW-141M2 | N | 5/7/2007 | E314.0 | 1 U |
| MW-141M2 | N | 11/15/2007 | E314.0 | 0.51 J |
| MW-141M2 | N | 5/28/2008 | SW6850 | 0.35 J |
| MW-141M2 | N | 11/14/2008 | SW6850 | 0.43 J |
| MW-141M2 | N | 6/3/2009 | SW6850 | 0.35 |
| MW-141M2 | N | 12/17/2009 | SW6850 | 0.33 |
| MW-141M2 | N | 6/30/2010 | SW6850 | 0.31 |
| MW-141M2 | N | 11/19/2010 | SW6850 | 0.33 |
| MW-141M2 | N | 6/22/2011 | SW6850 | 0.26 |
| MW-141M2 | N | 11/17/2011 | SW6850 | 0.23 |
| MW-179M1 | N | 7/25/2002 | E314.0 | 1.2 J |
| MW-179M1 | N | 3/7/2003 | E314.0 | 1.4 |
| MW-179M1 | N | 5/8/2003 | E314.0 | 1.4 |
| MW-179M1 | N | 7/10/2003 | E314.0 | 1.2 |
| MW-179M1 | N | 7/23/2004 | E314.0 | 1 U |
| MW-179M1 | N | 8/24/2004 | E314.0 | 1 UJ |
| MW-179M1 | N | 11/10/2004 | E314.0 | 1 UJ |
| MW-179M1 | FD | 11/10/2004 | E314.0 | 1 UJ |
| MW-179M1 | N | 5/2/2005 | E314.0 | 0.39 J |
| MW-179M1 | N | 9/1/2005 | E314.0 | 1 U |
| MW-179M1 | N | 11/30/2005 | E314.0 | 1 U |
| MW-179M1 | N | 5/1/2006 | E314.0 | 1 U |
| MW-179M1 | FD | 5/1/2006 | E314.0 | 1 U |
| MW-179M1 | N | 10/17/2006 | E314.0 | 1 U |
| MW-179M1 | N | 5/4/2007 | E314.0 | 1 U |
| MW-179M1 | N | 11/14/2007 | E314.0 | 1 U |
| MW-179M1 | N | 5/27/2008 | SW6850 | 1 U |
| MW-179M1 | N | 11/26/2008 | E314.0 | 1 U |

**Table A1**
**Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program**

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-179M1 | N | 6/10/2009 | SW6850 | 0.054 J |
| MW-179M1 | N | 12/16/2009 | SW6850 | 0.051 J |
| MW-179M1 | N | 6/1/2010 | SW6850 | 0.2 U |
| MW-179M1 | N | 11/15/2010 | SW6850 | 0.2 U |
| MW-179M1 | N | 6/20/2011 | SW6850 | 0.2 U |
| MW-179M1 | N | 11/17/2011 | SW6850 | 0.11 J |
| MW-184M1 | N | 6/21/2002 | E314.0 | 1 U |
| MW-184M1 | N | 9/18/2002 | E314.0 | 1 U |
| MW-184M1 | FD | 9/18/2002 | E314.0 | 1 U |
| MW-184M1 | N | 3/10/2003 | E314.0 | 1 U |
| MW-184M1 | FD | 5/21/2003 | E314.0 | 1 U |
| MW-184M1 | N | 5/21/2003 | E314.0 | 1 U |
| MW-184M1 | N | 5/18/2004 | E314.0 | 1 U |
| MW-184M1 | N | 8/10/2004 | E314.0 | 1 UJ |
| MW-184M1 | N | 2/9/2005 | E314.0 | 1 U |
| MW-184M1 | N | 5/12/2005 | E314.0 | 0.57 J |
| MW-184M1 | N | 11/1/2005 | E314.0 | 0.55 J |
| MW-184M1 | FD | 1/23/2006 | E314.0 | 1 U |
| MW-184M1 | N | 1/23/2006 | E314.0 | 1 U |
| MW-184M1 | N | 11/27/2006 | E314.0 | 0.46 J |
| MW-184M1 | FD | 5/11/2007 | E314.0 | 1 U |
| MW-184M1 | N | 5/11/2007 | E314.0 | 0.47 J |
| MW-184M1 | N | 11/26/2007 | E314.0 | 0.49 J |
| MW-184M1 | FD | 5/30/2008 | SW6850 | 0.49 J |
| MW-184M1 | N | 5/30/2008 | SW6850 | 0.5 J |
| MW-184M1 | FD | 11/18/2008 | SW6850 | 0.4 J |
| MW-184M1 | N | 11/18/2008 | SW6850 | 0.5 J |
| MW-184M1 | N | 6/4/2009 | SW6850 | 0.53 |
| MW-184M1 | N | 12/29/2009 | SW6850 | 0.53 |
| MW-184M1 | N | 6/9/2010 | SW6850 | 0.56 |
| MW-184M1 | N | 11/23/2010 | SW6850 | 0.84 |
| MW-184M1 | N | 6/20/2011 | SW6850 | 1.15 |
| MW-184M1 | N | 11/17/2011 | SW6850 | 1.2 |
| MW-184M2 | FD | 6/21/2002 | E314.0 | 1 U |
| MW-184M2 | N | 6/21/2002 | E314.0 | 1 |
| MW-184M2 | N | 9/19/2002 | E314.0 | 1 U |
| MW-184M2 | N | 3/10/2003 | E314.0 | 1 U |
| MW-184M2 | N | 5/21/2003 | E314.0 | 1 U |
| MW-184M2 | N | 10/30/2003 | E314.0 | 1 U |
| MW-184M2 | N | 2/9/2004 | E314.0 | 1 U |
| MW-184M2 | N | 5/18/2004 | E314.0 | 1 U |
| MW-184M2 | N | 10/13/2004 | E314.0 | 1 UJ |
| MW-184M2 | N | 2/9/2005 | E314.0 | 1 UJ |
| MW-184M2 | N | 5/12/2005 | E314.0 | 1 U |
| MW-184M2 | FD | 11/1/2005 | E314.0 | 1 U |
| MW-184M2 | N | 11/1/2005 | E314.0 | 1 U |
| MW-184M2 | N | 1/25/2006 | E314.0 | 1 U |

**Table A1**
**Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program**

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-184M2 | N | 11/27/2006 | E314.0 | 1 U |
| MW-184M2 | N | 5/11/2007 | E314.0 | 1 U |
| MW-184M2 | N | 11/26/2007 | E314.0 | 1 U |
| MW-184M2 | N | 5/30/2008 | SW6850 | 1 U |
| MW-184M2 | N | 11/18/2008 | SW6850 | 1 U |
| MW-184M2 | N | 6/4/2009 | SW6850 | 0.054 J |
| MW-184M2 | N | 6/9/2010 | SW6850 | 0.05 J |
| MW-184M2 | N | 11/23/2010 | SW6850 | 0.2 U |
| MW-184M2 | N | 6/20/2011 | SW6850 | 0.2 U |
| MW-184M2 | N | 11/17/2011 | SW6850 | 0.039 J |
| MW-208M1 | N | 7/26/2002 | E314.0 | 1 U |
| MW-208M1 | N | 5/22/2003 | E314.0 | 0.44 J |
| MW-208M1 | N | 10/15/2003 | E314.0 | 1 UJ |
| MW-208M1 | N | 7/23/2004 | E314.0 | 1 U |
| MW-208M1 | N | 8/13/2004 | E314.0 | 1 UJ |
| MW-208M1 | N | 12/14/2004 | E314.0 | 1 UJ |
| MW-208M1 | N | 5/9/2005 | E314.0 | 1 U |
| MW-208M1 | N | 8/3/2005 | E314.0 | 1 U |
| MW-208M1 | N | 12/9/2005 | E314.0 | 1 U |
| MW-208M1 | N | 4/26/2006 | E314.0 | 1 U |
| MW-208M1 | N | 10/26/2006 | E314.0 | 1 U |
| MW-208M1 | FD | 10/26/2006 | E314.0 | 1 U |
| MW-208M1 | N | 5/8/2007 | E314.0 | 1 U |
| MW-208M1 | N | 10/18/2007 | E314.0 | 1 U |
| MW-208M1 | N | 5/30/2008 | SW6850 | 1 U |
| MW-208M1 | N | 12/11/2008 | E314.0 | 1 U |
| MW-208M1 | N | 6/10/2009 | SW6850 | 0.2 U |
| MW-208M1 | N | 12/14/2009 | SW6850 | 0.2 U |
| MW-208M1 | N | 6/14/2010 | SW6850 | 0.051 J |
| MW-208M1 | N | 11/5/2010 | SW6850 | 0.2 U |
| MW-208M1 | N | 6/1/2011 | SW6850 | 0.2 U |
| MW-208M1 | N | 11/21/2011 | SW6850 | 0.2 U |
| MW-209M2 | N | 7/26/2002 | E314.0 | 1 U |
| MW-209M2 | N | 6/12/2003 | E314.0 | 1 U |
| MW-209M2 | N | 10/29/2003 | E314.0 | 1 U |
| MW-209M2 | N | 5/3/2004 | E314.0 | 1 U |
| MW-209M2 | FD | 9/29/2004 | E314.0 | 1 UJ |
| MW-209M2 | N | 9/29/2004 | E314.0 | 1 UJ |
| MW-209M2 | N | 12/22/2004 | E314.0 | 1 U |
| MW-209M2 | FD | 12/22/2004 | E314.0 | 1 U |
| MW-209M2 | N | 5/9/2005 | E314.0 | 0.39 J |
| MW-209M2 | FD | 11/9/2005 | E314.0 | 1 U |
| MW-209M2 | N | 11/9/2005 | E314.0 | 1 U |
| MW-209M2 | N | 1/26/2006 | E314.0 | 0.36 J |
| MW-209M2 | N | 4/17/2006 | E314.0 | 0.5 J |
| MW-209M2 | N | 10/16/2006 | E314.0 | 0.54 J |
| MW-209M2 | N | 5/15/2007 | E314.0 | 0.73 J |

**Table A1**
**Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program**

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-209M2 | N | 10/25/2007 | E314.0 | 2.2 J |
| MW-209M2 | FD | 10/25/2007 | E314.0 | 1 J |
| MW-209M2 | N | 6/3/2008 | SW6850 | 0.9 J |
| MW-209M2 | N | 12/8/2008 | E314.0 | 0.79 J |
| MW-209M2 | N | 6/18/2009 | SW6850 | 1.2 |
| MW-209M2 | N | 12/14/2009 | SW6850 | 1.1 |
| MW-209M2 | N | 5/26/2010 | SW6850 | 1.2 |
| MW-209M2 | N | 11/17/2010 | SW6850 | 1.21 |
| MW-209M2 | N | 6/13/2011 | SW6850 | 1.24 |
| MW-209M2 | FD | 6/13/2011 | SW6850 | 1.14 |
| MW-209M2 | N | 12/1/2011 | SW6850 | 1.27 |
| MW-223M1 | N | 7/30/2002 | E314.0 | 0.62 J |
| MW-223M1 | N | 3/18/2003 | E314.0 | 1 U |
| MW-223M1 | N | 6/25/2003 | E314.0 | 1 U |
| MW-223M1 | N | 1/30/2004 | E314.0 | 1 U |
| MW-223M1 | N | 3/12/2004 | E314.0 | 1 U |
| MW-223M1 | N | 5/17/2004 | E314.0 | 1 U |
| MW-223M1 | N | 8/10/2004 | E314.0 | 1 UJ |
| MW-223M1 | N | 3/25/2005 | E314.0 | 1 U |
| MW-223M1 | N | 5/10/2005 | E314.0 | 1 U |
| MW-223M1 | N | 10/24/2005 | E314.0 | 1 U |
| MW-223M1 | N | 1/11/2006 | E314.0 | 1 U |
| MW-223M1 | N | 4/18/2006 | E314.0 | 1 U |
| MW-223M1 | N | 10/18/2006 | E314.0 | 1 U |
| MW-223M1 | N | 5/14/2007 | E314.0 | 1 U |
| MW-223M1 | N | 12/5/2007 | E314.0 | 1 U |
| MW-223M1 | N | 6/10/2008 | SW6850 | 1 U |
| MW-223M1 | N | 12/8/2008 | E314.0 | 1 U |
| MW-223M1 | N | 6/18/2009 | SW6850 | 0.12 J |
| MW-223M1 | N | 12/9/2009 | SW6850 | 0.097 J |
| MW-223M1 | N | 6/29/2010 | SW6850 | 0.31 |
| MW-223M1 | N | 12/9/2010 | SW6850 | 0.2 U |
| MW-223M1 | N | 6/6/2011 | SW6850 | 0.21 |
| MW-223M1 | N | 11/21/2011 | SW6850 | 0.17 J |
| MW-23M1 | N | 8/8/2000 | E314.0 | 10 U |
| MW-23M1 | N | 7/30/2001 | E314.0 | 5 U |
| MW-23M1 | N | 3/14/2002 | E314.0 | 1 U |
| MW-23M1 | N | 4/7/2003 | E314.0 | 1 U |
| MW-23M1 | N | 8/30/2004 | E314.0 | 1 UJ |
| MW-23M1 | N | 8/1/2005 | E314.0 | 1 U |
| MW-23M1 | N | 10/31/2006 | E314.0 | 1 U |
| MW-23M1 | N | 5/15/2007 | E314.0 | 1 U |
| MW-23M1 | N | 10/25/2007 | E314.0 | 0.71 J |
| MW-23M1 | N | 6/3/2008 | SW6850 | 1 U |
| MW-23M1 | N | 12/9/2008 | E314.0 | 1 U |
| MW-23M1 | N | 6/15/2009 | SW6850 | 0.1 J |
| MW-23M1 | N | 12/8/2009 | SW6850 | 0.12 J |

**Table A1**
**Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program**

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-23M1 | N | 6/14/2010 | SW6850 | 0.2 |
| MW-23M1 | N | 12/9/2010 | SW6850 | 0.29 |
| MW-23M1 | N | 6/13/2011 | SW6850 | 0.4 |
| MW-23M1 | N | 12/5/2011 | SW6850 | 0.38 |
| MW-38M3 | N | 8/11/2000 | E314.0 | 10 UJ |
| MW-38M3 | N | 8/14/2001 | E314.0 | 5 U |
| MW-38M3 | N | 5/13/2002 | E314.0 | 1 |
| MW-38M3 | N | 9/26/2002 | E314.0 | 1.2 |
| MW-38M3 | N | 1/31/2003 | E314.0 | 1.6 J |
| MW-38M3 | N | 4/16/2003 | E314.0 | 1.7 J |
| MW-38M3 | N | 11/19/2003 | E314.0 | 2.3 |
| MW-38M3 | N | 2/26/2004 | E314.0 | 2.3 |
| MW-38M3 | N | 4/26/2004 | E314.0 | 2.1 |
| MW-38M3 | N | 11/4/2004 | E314.0 | 2.7 |
| MW-38M3 | N | 2/18/2005 | E314.0 | 3.1 J |
| MW-38M3 | N | 5/13/2005 | E314.0 | 2.8 |
| MW-38M3 | N | 10/25/2005 | E314.0 | 3 |
| MW-38M3 | N | 1/17/2006 | E314.0 | 3.2 |
| MW-38M3 | FD | 1/17/2006 | E314.0 | 3.2 |
| MW-38M3 | N | 4/26/2006 | E314.0 | 3.4 |
| MW-38M3 | N | 11/27/2006 | E314.0 | 3.3 |
| MW-38M3 | FD | 5/11/2007 | E314.0 | 3.3 |
| MW-38M3 | N | 5/11/2007 | E314.0 | 3.8 |
| MW-38M3 | N | 11/29/2007 | E314.0 | 3 |
| MW-38M3 | N | 5/20/2008 | E314.0 | 3.1 |
| MW-38M3 | N | 11/18/2008 | SW6850 | 2.7 |
| MW-38M3 | N | 6/9/2009 | SW6850 | 2.5 |
| MW-38M3 | FD | 6/9/2009 | SW6850 | 2.5 |
| MW-38M3 | N | 12/29/2009 | SW6850 | 1.8 |
| MW-38M3 | FD | 6/9/2010 | SW6850 | 1.5 |
| MW-38M3 | N | 6/9/2010 | SW6850 | 1.5 |
| MW-38M3 | N | 11/23/2010 | SW6850 | 1.12 |
| MW-38M3 | FD | 11/23/2010 | SW6850 | 1.12 |
| MW-38M3 | N | 6/17/2011 | SW6850 | 1.08 |
| MW-38M3 | N | 11/17/2011 | SW6850 | 0.96 |
| MW-39M2 | N | 8/10/2000 | E314.0 | 10 UJ |
| MW-39M2 | FD | 3/14/2002 | E314.0 | 0.58 J |
| MW-39M2 | N | 3/14/2002 | E314.0 | 0.58 J |
| MW-39M2 | N | 2/3/2003 | E314.0 | 0.76 J |
| MW-39M2 | FD | 2/3/2003 | E314.0 | 0.46 J |
| MW-39M2 | N | 4/14/2003 | E314.0 | 2 UJ |
| MW-39M2 | N | 10/17/2003 | E314.0 | 1 U |
| MW-39M2 | FD | 10/17/2003 | E314.0 | 1 U |
| MW-39M2 | N | 2/26/2004 | E314.0 | 1 U |
| MW-39M2 | N | 5/13/2004 | E314.0 | 1 U |
| MW-39M2 | N | 10/22/2004 | E314.0 | 1 UJ |
| MW-39M2 | N | 3/8/2005 | E314.0 | 1 U |

# Table A1
# Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-39M2 | N | 5/13/2005 | E314.0 | 0.39 J |
| MW-39M2 | N | 8/19/2005 | E314.0 | 1 U |
| MW-39M2 | N | 12/29/2005 | E314.0 | 1 U |
| MW-39M2 | N | 4/13/2006 | E314.0 | 1 U |
| MW-39M2 | N | 5/9/2007 | E314.0 | 1 U |
| MW-39M2 | N | 5/28/2008 | SW6850 | 1 U |
| MW-39M2 | N | 6/3/2009 | SW6850 | 0.074 J |
| MW-39M2 | N | 6/23/2010 | SW6850 | 0.065 J |
| MW-39M2 | N | 6/1/2011 | SW6850 | 0.2 U |
| MW-44M1 | N | 8/15/2002 | E314.0 | 1 U |
| MW-44M1 | FD | 4/8/2003 | E314.0 | 0.44 J |
| MW-44M1 | N | 4/8/2003 | E314.0 | 1 U |
| MW-44M1 | N | 11/12/2003 | E314.0 | 0.54 J |
| MW-44M1 | N | 4/30/2004 | E314.0 | 0.45 J |
| MW-44M1 | N | 9/28/2004 | E314.0 | 1 UJ |
| MW-44M1 | N | 11/10/2004 | E314.0 | 1 UJ |
| MW-44M1 | N | 4/27/2005 | E314.0 | 1 UJ |
| MW-44M1 | N | 9/8/2005 | E314.0 | 0.46 J |
| MW-44M1 | N | 12/14/2005 | E314.0 | 0.4 J |
| MW-44M1 | N | 4/20/2006 | E314.0 | 0.65 J |
| MW-44M1 | N | 5/11/2007 | E314.0 | 0.64 J |
| MW-44M1 | N | 5/28/2008 | SW6850 | 1 |
| MW-44M1 | N | 6/17/2009 | SW6850 | 1.3 |
| MW-44M1 | N | 6/2/2010 | SW6850 | 0.87 |
| MW-44M1 | N | 5/31/2011 | SW6850 | 0.8 |
| MW-477M1 | N | 1/8/2007 | E314.0 | 1 U |
| MW-477M1 | N | 5/10/2007 | E314.0 | 17.4 U |
| MW-477M1 | N | 9/10/2007 | E314.0 | 0.82 J |
| MW-477M1 | N | 6/26/2008 | E314.0 | 1 U |
| MW-477M1 | N | 5/29/2009 | SW6850 | 0.07 J |
| MW-477M1 | N | 5/12/2010 | SW6850 | 0.2 U |
| MW-477M1 | N | 5/20/2011 | SW6850 | 0.2 U |
| MW-477M2 | N | 1/8/2007 | E314.0 | 1 U |
| MW-477M2 | N | 5/10/2007 | E314.0 | 1 U |
| MW-477M2 | N | 9/10/2007 | E314.0 | 1 U |
| MW-477M2 | FD | 9/10/2007 | E314.0 | 1 U |
| MW-477M2 | N | 6/26/2008 | E314.0 | 1 U |
| MW-477M2 | N | 5/29/2009 | SW6850 | 0.05 J |
| MW-477M2 | N | 5/12/2010 | SW6850 | 0.2 U |
| MW-477M2 | N | 5/20/2011 | SW6850 | 0.2 U |
| MW-487M2 | FD | 4/18/2007 | E314.0 | 0.35 J |
| MW-487M2 | N | 4/18/2007 | E314.0 | 1 U |
| MW-487M2 | N | 8/15/2007 | E314.0 | 0.53 J |
| MW-487M2 | N | 12/13/2007 | E314.0 | 0.92 J |
| MW-487M2 | N | 6/30/2008 | E314.0 | 0.87 J |
| MW-487M2 | N | 5/22/2009 | SW6850 | 0.99 |
| MW-487M2 | N | 6/1/2010 | SW6850 | 0.73 |

**Table A1**
**Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program**

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-487M2 | N | 5/31/2011 | SW6850 | 0.66 |
| MW-50M2 | N | 8/14/2002 | E314.0 | 1 U |
| MW-50M2 | N | 4/7/2003 | E314.0 | 1 U |
| MW-50M2 | N | 5/11/2004 | E314.0 | 1 UJ |
| MW-50M2 | N | 8/16/2004 | E314.0 | 1 UJ |
| MW-50M2 | N | 1/5/2005 | E314.0 | 1 U |
| MW-50M2 | N | 4/22/2005 | E314.0 | 1 UJ |
| MW-50M2 | FD | 4/22/2005 | E314.0 | 1 UJ |
| MW-50M2 | N | 8/24/2005 | E314.0 | 1 U |
| MW-50M2 | N | 12/8/2005 | E314.0 | 1 U |
| MW-50M2 | N | 10/18/2006 | E314.0 | 1 U |
| MW-50M2 | N | 5/17/2007 | E314.0 | 1 U |
| MW-50M2 | N | 11/8/2007 | E314.0 | 1 U |
| MW-50M2 | N | 6/11/2008 | SW6850 | 1 U |
| MW-50M2 | N | 12/11/2008 | E314.0 | 1 U |
| MW-50M2 | N | 6/22/2009 | SW6850 | 0.1 J |
| MW-50M2 | N | 12/8/2009 | SW6850 | 0.18 J |
| MW-50M2 | N | 6/22/2010 | SW6850 | 0.094 J |
| MW-50M2 | N | 12/8/2010 | SW6850 | 0.2 U |
| MW-50M2 | N | 6/8/2011 | SW6850 | 0.081 J |
| MW-50M2 | N | 12/1/2011 | SW6850 | 0.085 J |
| MW-85M1 | N | 2/10/2001 | E314.0 | 5 U |
| MW-85M1 | N | 9/26/2001 | E314.0 | 5 U |
| MW-85M1 | N | 12/15/2001 | E314.0 | 0.5 J |
| MW-85M1 | N | 5/22/2002 | E314.0 | 1 UJ |
| MW-85M1 | N | 9/12/2002 | E314.0 | 1 U |
| MW-85M1 | N | 1/13/2003 | E314.0 | 1 U |
| MW-85M1 | N | 4/1/2003 | E314.0 | 1 U |
| MW-85M1 | N | 10/30/2003 | E314.0 | 1 U |
| MW-85M1 | N | 3/2/2004 | E314.0 | 1 U |
| MW-85M1 | FD | 3/2/2004 | E314.0 | 1 U |
| MW-85M1 | N | 4/29/2004 | E314.0 | 1 U |
| MW-85M1 | N | 9/24/2004 | E314.0 | 1 U |
| MW-85M1 | FD | 11/19/2004 | E314.0 | 1 U |
| MW-85M1 | N | 11/19/2004 | E314.0 | 1 U |
| MW-85M1 | FD | 5/3/2005 | E314.0 | 1 U |
| MW-85M1 | N | 5/3/2005 | E314.0 | 1 U |
| MW-85M1 | FD | 7/25/2005 | E314.0 | 1 U |
| MW-85M1 | N | 7/25/2005 | E314.0 | 1 U |
| MW-85M1 | N | 12/12/2005 | E314.0 | 1 U |
| MW-85M1 | N | 4/25/2006 | E314.0 | 1 U |
| MW-85M1 | N | 5/22/2007 | E314.0 | 1 U |
| MW-85M1 | N | 6/3/2008 | SW6850 | 1 U |
| MW-85M1 | N | 6/1/2009 | SW6850 | 0.062 J |
| MW-85M1 | N | 6/2/2010 | SW6850 | 0.2 U |
| MW-85M1 | N | 6/9/2011 | SW6850 | 0.2 U |
| MW-86M1 | N | 8/15/2002 | E314.0 | 1 U |

**Table A1**
**Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program**

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-86M1 | N | 4/11/2003 | E314.0 | 0.44 J |
| MW-86M1 | N | 11/14/2003 | E314.0 | 0.56 J |
| MW-86M1 | N | 5/3/2004 | E314.0 | 0.64 J |
| MW-86M1 | FD | 5/3/2004 | E314.0 | 0.64 J |
| MW-86M1 | N | 8/31/2004 | E314.0 | 0.78 J |
| MW-86M1 | N | 12/15/2004 | E314.0 | 0.95 J |
| MW-86M1 | N | 3/31/2005 | E314.0 | 1.2 |
| MW-86M1 | N | 8/22/2005 | E314.0 | 0.9 J |
| MW-86M1 | N | 12/6/2005 | E314.0 | 0.88 J |
| MW-86M1 | N | 4/18/2006 | E314.0 | 1.3 |
| MW-86M1 | N | 10/17/2006 | E314.0 | 1.3 |
| MW-86M1 | N | 5/8/2007 | E314.0 | 1.1 |
| MW-86M1 | N | 10/19/2007 | E314.0 | 1.4 |
| MW-86M1 | N | 6/3/2008 | SW6850 | 1.6 |
| MW-86M1 | N | 12/10/2008 | E314.0 | 1.5 |
| MW-86M1 | FD | 6/19/2009 | SW6850 | 1.6 |
| MW-86M1 | N | 6/19/2009 | SW6850 | 1.6 |
| MW-86M1 | N | 1/5/2010 | SW6850 | 1.5 |
| MW-86M1 | FD | 6/3/2010 | SW6850 | 1.1 |
| MW-86M1 | N | 6/3/2010 | SW6850 | 1.1 |
| MW-86M1 | N | 11/5/2010 | SW6850 | 0.83 |
| MW-86M1 | N | 6/2/2011 | SW6850 | 0.72 |
| MW-86M1 | N | 11/30/2011 | SW6850 | 0.58 |
| MW-87M1 | N | 6/13/2002 | E314.0 | 1 U |
| MW-87M1 | N | 4/7/2003 | E314.0 | 1 U |
| MW-87M1 | N | 7/1/2004 | E314.0 | 0.67 J |
| MW-87M1 | N | 8/18/2004 | E314.0 | 0.77 J |
| MW-87M1 | N | 1/7/2005 | E314.0 | 0.74 J |
| MW-87M1 | N | 5/3/2005 | E314.0 | 0.77 J |
| MW-87M1 | N | 10/28/2005 | E314.0 | 0.79 J |
| MW-87M1 | N | 1/12/2006 | E314.0 | 1 |
| MW-87M1 | N | 4/25/2006 | E314.0 | 0.95 J |
| MW-87M1 | N | 10/25/2006 | E314.0 | 1.3 |
| MW-87M1 | FD | 5/9/2007 | E314.0 | 1.6 |
| MW-87M1 | N | 5/9/2007 | E314.0 | 1.7 |
| MW-87M1 | N | 10/23/2007 | E314.0 | 2.8 |
| MW-87M1 | FD | 5/29/2008 | SW6850 | 3.8 |
| MW-87M1 | N | 5/29/2008 | SW6850 | 3.7 |
| MW-87M1 | FD | 12/9/2008 | E314.0 | 3.5 |
| MW-87M1 | N | 12/9/2008 | E314.0 | 3.7 |
| MW-87M1 | FD | 6/1/2009 | SW6850 | 4.8 |
| MW-87M1 | N | 6/1/2009 | SW6850 | 4.8 |
| MW-87M1 | FD | 1/4/2010 | SW6850 | 4.9 |
| MW-87M1 | N | 1/4/2010 | SW6850 | 4.8 |
| MW-87M1 | FD | 6/14/2010 | SW6850 | 4.7 |
| MW-87M1 | N | 6/14/2010 | SW6850 | 4.8 |
| MW-87M1 | N | 11/16/2010 | SW6850 | 5.87 |

**Table A1**
**Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program**

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-87M1 | FD | 11/16/2010 | SW6850 | 5.79 |
| MW-87M1 | N | 6/1/2011 | SW6850 | 5.45 |
| MW-87M1 | FD | 6/1/2011 | SW6850 | 5.45 |
| MW-87M1 | N | 11/28/2011 | SW6850 | 5.69 |
| MW-87M1 | FD | 11/28/2011 | SW6850 | 5.66 |
| MW-88M2 | N | 6/27/2002 | E314.0 | 1 U |
| MW-88M2 | FD | 4/27/2004 | E314.0 | 1 U |
| MW-88M2 | N | 4/27/2004 | E314.0 | 1 U |
| MW-88M2 | N | 8/20/2004 | E314.0 | 1 UJ |
| MW-88M2 | N | 12/29/2004 | E314.0 | 0.505 J |
| MW-88M2 | FD | 12/29/2004 | E314.0 | 0.55 J |
| MW-88M2 | N | 4/28/2005 | E314.0 | 0.65 J |
| MW-88M2 | N | 9/20/2005 | E314.0 | 0.77 J |
| MW-88M2 | N | 12/6/2005 | E314.0 | 1.2 |
| MW-88M2 | N | 10/16/2006 | E314.0 | 1.8 |
| MW-88M2 | N | 5/9/2007 | E314.0 | 2.1 |
| MW-88M2 | N | 10/19/2007 | E314.0 | 2.5 |
| MW-88M2 | FD | 10/19/2007 | E314.0 | 2.6 |
| MW-88M2 | N | 6/2/2008 | SW6850 | 3.1 |
| MW-88M2 | N | 12/10/2008 | E314.0 | 3.3 |
| MW-88M2 | FD | 6/9/2009 | SW6850 | 3.4 |
| MW-88M2 | N | 6/9/2009 | SW6850 | 3.4 |
| MW-88M2 | FD | 12/30/2009 | SW6850 | 3.6 |
| MW-88M2 | N | 12/30/2009 | SW6850 | 3.5 |
| MW-88M2 | FD | 6/8/2010 | SW6850 | 4 |
| MW-88M2 | N | 6/8/2010 | SW6850 | 3.9 |
| MW-88M2 | FD | 11/17/2010 | SW6850 | 4.24 |
| MW-88M2 | N | 11/17/2010 | SW6850 | 4.17 |
| MW-88M2 | FD | 6/1/2011 | SW6850 | 5.09 |
| MW-88M2 | N | 6/1/2011 | SW6850 | 5.14 |
| MW-88M2 | N | 11/28/2011 | SW6850 | 5.46 |
| MW-88M2 | FD | 11/28/2011 | SW6850 | 5.7 |
| MW-88M3 | N | 6/27/2002 | E314.0 | 1 U |
| MW-88M3 | N | 10/16/2006 | E314.0 | 1 U |
| MW-88M3 | N | 5/9/2007 | E314.0 | 1 U |
| MW-88M3 | N | 10/19/2007 | E314.0 | 1 U |
| MW-88M3 | N | 6/2/2008 | SW6850 | 1 U |
| MW-88M3 | N | 12/10/2008 | E314.0 | 1 U |
| MW-88M3 | N | 6/9/2009 | SW6850 | 0.12 J |
| MW-88M3 | N | 12/30/2009 | SW6850 | 0.1 J |
| MW-88M3 | N | 6/8/2010 | SW6850 | 0.077 J |
| MW-88M3 | N | 11/17/2010 | SW6850 | 0.2 U |
| MW-88M3 | N | 6/1/2011 | SW6850 | 0.2 U |
| MW-88M3 | N | 11/28/2011 | SW6850 | 0.2 U |
| MW-89M2 | N | 6/17/2002 | E314.0 | 1 U |
| MW-89M2 | N | 4/17/2003 | E314.0 | 2 U |
| MW-89M2 | N | 10/10/2003 | E314.0 | 1 U |

**Table A1**
**Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program**

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-89M2 | N | 4/27/2004 | E314.0 | 1 U |
| MW-89M2 | N | 10/5/2004 | E314.0 | 0.6 J |
| MW-89M2 | N | 11/22/2004 | E314.0 | 1.11 J |
| MW-89M2 | N | 3/28/2005 | E314.0 | 1.4 |
| MW-89M2 | N | 9/13/2005 | E314.0 | 2.2 |
| MW-89M2 | N | 12/20/2005 | E314.0 | 3.1 |
| MW-89M2 | N | 11/2/2006 | E314.0 | 4.4 |
| MW-89M2 | FD | 5/9/2007 | E314.0 | 4 |
| MW-89M2 | N | 5/9/2007 | E314.0 | 4.2 |
| MW-89M2 | N | 10/23/2007 | E314.0 | 5.5 |
| MW-89M2 | FD | 6/3/2008 | SW6850 | 6.6 |
| MW-89M2 | N | 6/3/2008 | SW6850 | 6.5 |
| MW-89M2 | FD | 6/2/2009 | SW6850 | 9.9 |
| MW-89M2 | N | 6/2/2009 | SW6850 | 9.7 |
| MW-89M2 | N | 6/3/2010 | SW6850 | 9.2 |
| MW-89M2 | FD | 6/3/2010 | SW6850 | 9 |
| MW-89M2 | N | 6/1/2011 | SW6850 | 9.84 |
| MW-89M2 | FD | 6/1/2011 | SW6850 | 10 |
| MW-89M2 | FD | 11/28/2011 | SW6850 | 10.2 |
| MW-89M2 | N | 11/28/2011 | SW6850 | 9.98 |
| MW-90S | N | 1/20/2001 | E314.0 | 5 UJ |
| MW-90S | N | 10/9/2001 | E314.0 | 5 U |
| MW-90S | N | 12/16/2001 | E314.0 | 0.52 J |
| MW-90S | N | 9/12/2002 | E314.0 | 1 U |
| MW-90S | N | 1/23/2003 | E314.0 | 1 U |
| MW-90S | N | 6/2/2003 | E314.0 | 0.47 J |
| MW-90S | N | 11/19/2003 | E314.0 | 1 UJ |
| MW-90S | N | 2/17/2004 | E314.0 | 1 U |
| MW-90S | N | 5/6/2004 | E314.0 | 1 U |
| MW-90S | N | 10/18/2004 | E314.0 | 1 UJ |
| MW-90S | N | 11/19/2004 | E314.0 | 1 U |
| MW-90S | N | 4/29/2005 | E314.0 | 1 UJ |
| MW-90S | N | 10/17/2005 | E314.0 | 1 U |
| MW-90S | N | 1/17/2006 | E314.0 | 1 U |
| MW-90S | FD | 4/19/2006 | E314.0 | 1 U |
| MW-90S | N | 4/19/2006 | E314.0 | 1 U |
| MW-90S | N | 5/10/2007 | E314.0 | 1 U |
| MW-90S | N | 6/17/2008 | E314.0 | 1 U |
| MW-90S | N | 6/16/2009 | SW6850 | 0.062 J |
| MW-90S | N | 6/1/2010 | SW6850 | 0.2 U |
| MW-90S | N | 5/31/2011 | SW6850 | 0.2 U |
| MW-91S | N | 1/20/2001 | E314.0 | 5 J |
| MW-91S | N | 10/9/2001 | E314.0 | 3.22 J |
| MW-91S | N | 12/20/2001 | E314.0 | 3.83 J |
| MW-91S | N | 5/20/2002 | E314.0 | 4 |
| MW-91S | N | 1/31/2003 | E314.0 | 2.8 J |
| MW-91S | N | 5/21/2003 | E314.0 | 2.9 |

**Table A1**
**Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program**

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-91S | N | 11/14/2003 | E314.0 | 1.8 J |
| MW-91S | N | 2/20/2004 | E314.0 | 2 J |
| MW-91S | N | 5/5/2004 | E314.0 | 1.4 J |
| MW-91S | N | 9/28/2004 | E314.0 | 1.3 J |
| MW-91S | N | 11/12/2004 | E314.0 | 1.16 J |
| MW-91S | N | 4/29/2005 | E314.0 | 1.2 J |
| MW-91S | N | 11/15/2005 | E314.0 | 0.86 J |
| MW-91S | N | 1/24/2006 | E314.0 | 1.1 |
| MW-91S | N | 4/19/2006 | E314.0 | 1.2 |
| MW-91S | N | 5/10/2007 | E314.0 | 1 U |
| MW-91S | FD | 5/10/2007 | E314.0 | 1 U |
| MW-91S | N | 6/6/2008 | SW6850 | 1 U |
| MW-91S | N | 6/16/2009 | SW6850 | 0.13 J |
| MW-91S | N | 6/8/2010 | SW6850 | 0.082 J |
| MW-91S | N | 5/31/2011 | SW6850 | 0.2 U |
| MW-93M1 | N | 1/20/2001 | E314.0 | 3 J |
| MW-93M1 | FD | 1/20/2001 | E314.0 | 2 J |
| MW-93M1 | N | 10/3/2001 | E314.0 | 1.8 J |
| MW-93M1 | N | 11/28/2001 | E314.0 | 1.35 J |
| MW-93M1 | N | 5/20/2002 | E314.0 | 0.83 J |
| MW-93M1 | N | 9/24/2002 | E314.0 | 1.1 |
| MW-93M1 | N | 2/3/2003 | E314.0 | 1.6 J |
| MW-93M1 | N | 3/31/2003 | E314.0 | 1.4 J |
| MW-93M1 | N | 10/22/2003 | E314.0 | 1.57 |
| MW-93M1 | N | 2/9/2004 | E314.0 | 1.3 |
| MW-93M1 | N | 7/15/2004 | E314.0 | 1 |
| MW-93M1 | FD | 7/15/2004 | E314.0 | 1.2 |
| MW-93M1 | N | 9/28/2004 | E314.0 | 1.2 J |
| MW-93M1 | N | 11/12/2004 | E314.0 | 1.16 J |
| MW-93M1 | N | 4/28/2005 | E314.0 | 1.2 |
| MW-93M1 | N | 11/3/2005 | E314.0 | 1.1 |
| MW-93M1 | N | 1/19/2006 | E314.0 | 0.87 J |
| MW-93M1 | N | 5/2/2006 | E314.0 | 0.89 J |
| MW-93M1 | N | 10/25/2006 | E314.0 | 0.75 J |
| MW-93M1 | N | 5/11/2007 | E314.0 | 0.57 J |
| MW-93M1 | N | 11/28/2007 | E314.0 | 0.71 J |
| MW-93M1 | N | 5/28/2008 | SW6850 | 0.82 J |
| MW-93M1 | N | 11/13/2008 | SW6850 | 0.84 J |
| MW-93M1 | N | 6/16/2009 | SW6850 | 0.79 |
| MW-93M1 | N | 12/16/2009 | SW6850 | 0.6 |
| MW-93M1 | N | 6/2/2010 | SW6850 | 0.59 |
| MW-93M1 | N | 11/22/2010 | SW6850 | 0.69 |
| MW-93M1 | N | 6/9/2011 | SW6850 | 0.85 |
| MW-93M1 | N | 12/2/2011 | SW6850 | 0.77 |
| MW-95M2 | N | 5/20/2002 | E314.0 | 1 U |
| MW-95M2 | N | 4/11/2003 | E314.0 | 0.5 J |
| MW-95M2 | N | 10/15/2003 | E314.0 | 0.58 J |

# Table A1
# Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-95M2 | FD | 10/15/2003 | E314.0 | 0.59 J |
| MW-95M2 | N | 7/23/2004 | E314.0 | 1 |
| MW-95M2 | N | 8/27/2004 | E314.0 | 0.89 J |
| MW-95M2 | N | 12/30/2004 | E314.0 | 1.38 |
| MW-95M2 | FD | 5/5/2005 | E314.0 | 1.1 |
| MW-95M2 | N | 5/5/2005 | E314.0 | 1.1 |
| MW-95M2 | N | 9/6/2005 | E314.0 | 1.1 |
| MW-95M2 | N | 12/6/2005 | E314.0 | 0.77 J |
| MW-95M2 | N | 4/25/2006 | E314.0 | 0.75 J |
| MW-95M2 | N | 10/25/2006 | E314.0 | 0.74 J |
| MW-95M2 | N | 5/9/2007 | E314.0 | 0.58 J |
| MW-95M2 | N | 10/23/2007 | E314.0 | 0.86 J |
| MW-95M2 | N | 6/2/2008 | SW6850 | 0.56 J |
| MW-95M2 | N | 12/10/2008 | E314.0 | 0.78 J |
| MW-95M2 | N | 6/9/2009 | SW6850 | 0.6 |
| MW-95M2 | N | 1/4/2010 | SW6850 | 0.42 |
| MW-95M2 | N | 6/3/2010 | SW6850 | 0.38 |
| MW-95M2 | N | 11/19/2010 | SW6850 | 0.3 |
| MW-95M2 | N | 6/21/2011 | SW6850 | 0.23 |
| MW-95M2 | N | 11/28/2011 | SW6850 | 0.23 |
| MW-96M2 | N | 5/19/2004 | E314.0 | 1 U |
| MW-96M2 | N | 8/24/2004 | E314.0 | 1 UJ |
| MW-96M2 | N | 1/10/2005 | E314.0 | 1 UJ |
| MW-96M2 | N | 5/9/2005 | E314.0 | 0.39 J |
| MW-96M2 | N | 8/24/2005 | E314.0 | 1 U |
| MW-96M2 | N | 12/9/2005 | E314.0 | 1 U |
| MW-96M2 | N | 4/25/2006 | E314.0 | 1 U |
| MW-96M2 | FD | 10/25/2006 | E314.0 | 1 U |
| MW-96M2 | N | 10/25/2006 | E314.0 | 1 U |
| MW-96M2 | N | 5/7/2007 | E314.0 | 1 U |
| MW-96M2 | N | 11/16/2007 | E314.0 | 1 U |
| MW-96M2 | N | 5/19/2008 | E314.0 | 1 U |
| MW-96M2 | N | 12/10/2008 | E314.0 | 1 U |
| MW-96M2 | N | 6/2/2009 | SW6850 | 0.089 J |
| MW-96M2 | N | 12/15/2009 | SW6850 | 0.064 J |
| MW-96M2 | N | 6/14/2010 | SW6850 | 0.074 J |
| MW-96M2 | N | 11/15/2010 | SW6850 | 0.2 U |
| MW-96M2 | N | 5/31/2011 | SW6850 | 0.2 U |
| MW-96M2 | N | 11/30/2011 | SW6850 | 0.2 U |
| MW-98M1 | N | 1/13/2001 | E314.0 | 5 U |
| MW-98M1 | N | 10/24/2001 | E314.0 | 5 U |
| MW-98M1 | N | 11/28/2001 | E314.0 | 0.38 J |
| MW-98M1 | N | 5/24/2002 | E314.0 | 1 U |
| MW-98M1 | FD | 5/24/2002 | E314.0 | 1 U |
| MW-98M1 | N | 9/26/2002 | E314.0 | 1 U |
| MW-98M1 | N | 12/2/2002 | E314.0 | 1 U |
| MW-98M1 | N | 4/9/2003 | E314.0 | 1 U |

## Table A1
## Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-98M1 | N | 11/12/2003 | E314.0 | 1 U |
| MW-98M1 | N | 2/23/2004 | E314.0 | 1 UJ |
| MW-98M1 | N | 5/6/2004 | E314.0 | 0.43 J |
| MW-98M1 | N | 9/24/2004 | E314.0 | 1 U |
| MW-98M1 | N | 11/9/2004 | E314.0 | 0.54 J |
| MW-98M1 | FD | 11/9/2004 | E314.0 | 0.56 J |
| MW-98M1 | N | 4/28/2005 | E314.0 | 0.42 J |
| MW-98M1 | N | 8/18/2005 | E314.0 | 1 U |
| MW-98M1 | N | 12/15/2005 | E314.0 | 1 U |
| MW-98M1 | FD | 12/15/2005 | E314.0 | 1 U |
| MW-98M1 | N | 4/20/2006 | E314.0 | 1 U |
| MW-98M1 | N | 5/10/2007 | E314.0 | 1 U |
| MW-98M1 | N | 5/20/2008 | E314.0 | 1 U |
| MW-98M1 | N | 6/25/2009 | SW6850 | 0.32 |
| MW-98M1 | N | 5/27/2010 | SW6850 | 0.17 J |
| MW-98M1 | N | 6/15/2011 | SW6850 | 0.2 U |
| MW-99S | N | 1/13/2001 | E314.0 | 5 U |
| MW-99S | N | 10/23/2001 | E314.0 | 5 U |
| MW-99S | N | 11/29/2001 | E314.0 | 0.471 J |
| MW-99S | N | 5/23/2002 | E314.0 | 0.94 J |
| MW-99S | N | 6/2/2003 | E314.0 | 1 U |
| MW-99S | N | 10/2/2003 | E314.0 | 1 UJ |
| MW-99S | N | 2/23/2004 | E314.0 | 1 U |
| MW-99S | N | 5/5/2004 | E314.0 | 1 U |
| MW-99S | N | 9/24/2004 | E314.0 | 1 U |
| MW-99S | N | 11/9/2004 | E314.0 | 1 UJ |
| MW-99S | N | 4/28/2005 | E314.0 | 1 UJ |
| MW-99S | N | 9/12/2005 | E314.0 | 1 U |
| MW-99S | N | 12/15/2005 | E314.0 | 1 U |
| MW-99S | N | 4/20/2006 | E314.0 | 1 U |
| MW-99S | N | 5/18/2007 | E314.0 | 1 U |
| MW-99S | N | 5/20/2008 | E314.0 | 0.48 J |
| MW-99S | N | 6/25/2009 | SW6850 | 0.22 |
| MW-99S | N | 5/27/2010 | SW6850 | 0.062 J |
| MW-99S | N | 6/14/2011 | SW6850 | 0.35 |
| OW-2 | N | 11/15/2001 | E314.0 | 1.18 J |
| OW-2 | N | 5/21/2002 | E314.0 | 1.67 J |
| OW-2 | N | 8/30/2002 | E314.0 | 1.62 |
| OW-2 | N | 1/23/2003 | E314.0 | 1.3 |
| OW-2 | N | 11/13/2003 | E314.0 | 1.2 |
| OW-2 | N | 3/2/2004 | E314.0 | 1.4 |
| OW-2 | N | 9/28/2004 | E314.0 | 1.1 J |
| OW-2 | N | 11/21/2005 | E314.0 | 0.56 J |
| OW-2 | FD | 11/16/2006 | E314.0 | 0.42 J |
| OW-2 | N | 11/16/2006 | E314.0 | 1 U |
| OW-2 | FD | 5/23/2007 | E314.0 | 0.59 J |
| OW-2 | N | 5/23/2007 | E314.0 | 0.84 J |

**Table A1**
**Historic Perchlorate Data for CIA MOnitoring Wells in 2011 Program**

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| OW-2 | N | 11/30/2007 | E314.0 | 0.53 J |
| OW-2 | N | 5/30/2008 | SW6850 | 0.42 J |
| OW-2 | N | 11/13/2008 | SW6850 | 1 U |
| OW-2 | N | 6/17/2009 | SW6850 | 0.4 |
| OW-2 | N | 12/16/2009 | SW6850 | 0.37 |
| OW-2 | N | 6/29/2010 | SW6850 | 0.37 |
| OW-2 | N | 11/22/2010 | SW6850 | 0.29 |
| OW-2 | N | 6/10/2011 | SW6850 | 0.26 |
| OW-2 | N | 11/18/2011 | SW6850 | 0.2 |

N = normal field sample
U = not detected
J = estimated
ug/L = parts per billion

# Table A2
# Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| 58MW0011D | N | 5/24/2001 | SW8330 | 7.3 |
| 58MW0011D | N | 9/26/2001 | SW8330 | 6.5 |
| 58MW0011D | N | 12/11/2001 | SW8330 | 5.1 |
| 58MW0011D | N | 6/3/2002 | SW8330 | 4.5 |
| 58MW0011D | N | 8/27/2002 | SW8330 | 4.6 |
| 58MW0011D | N | 12/9/2002 | SW8330 | 3.4 |
| 58MW0011D | N | 6/9/2003 | SW8330 | 2.5 |
| 58MW0011D | N | 11/21/2003 | SW8330 | 1.4 J |
| 58MW0011D | N | 3/4/2004 | SW8330 | 0.77 |
| 58MW0011D | N | 8/16/2004 | SW8330 | 0.48 |
| 58MW0011D | FD | 2/18/2005 | SW8330 | 0.25 U |
| 58MW0011D | N | 2/18/2005 | SW8330 | 0.25 U |
| 58MW0011D | N | 11/1/2005 | SW8330 | 0.76 J |
| 58MW0011D | N | 5/11/2007 | SW8330 | 2.7 |
| 58MW0011D | N | 6/4/2008 | SW8330 | 0.34 |
| 58MW0011D | N | 7/1/2009 | SW8330 | 0.25 U |
| 58MW0011D | N | 6/30/2010 | SW8330 | 1.2 |
| 58MW0011D | N | 6/7/2011 | SW8330 | 2.49 |
| 58MW0016A | N | 5/30/2001 | SW8330 | 0.25 U |
| 58MW0016A | N | 8/31/2001 | SW8330 | 0.25 U |
| 58MW0016A | N | 12/11/2001 | SW8330 | 0.25 U |
| 58MW0016A | FD | 6/3/2002 | SW8330 | 0.25 U |
| 58MW0016A | N | 6/3/2002 | SW8330 | 0.25 U |
| 58MW0016A | N | 8/27/2002 | SW8330 | 0.25 U |
| 58MW0016A | N | 12/11/2002 | SW8330 | 0.25 U |
| 58MW0016A | N | 5/8/2003 | SW8330 | 0.25 U |
| 58MW0016A | N | 4/28/2004 | SW8330 | 0.25 U |
| 58MW0016A | N | 11/5/2004 | SW8330 | 0.25 J |
| 58MW0016A | N | 4/25/2005 | SW8330 | 0.25 U |
| 58MW0016A | N | 11/2/2005 | SW8330 | 0.25 U |
| 58MW0016A | N | 11/28/2006 | SW8330 | 0.25 U |
| 58MW0016A | N | 5/10/2007 | SW8330 | 0.25 U |
| 58MW0016A | N | 11/29/2007 | SW8330 | 0.25 U |
| 58MW0016A | N | 6/4/2008 | SW8330 | 0.25 U |
| 58MW0016A | N | 11/17/2008 | SW8330 | 0.25 U |
| 58MW0016A | N | 6/26/2009 | SW8330 | 0.25 U |
| 58MW0016A | N | 12/30/2009 | SW8330 | 0.2 U |
| 58MW0016A | N | 6/29/2010 | SW8330 | 0 R |
| 58MW0016A | N | 11/23/2010 | SW8330 | 0.2 U |
| 58MW0016A | N | 6/3/2011 | SW8330 | 0.2 U |
| 58MW0016A | N | 11/29/2011 | SW8330 | 0.2 U |
| MW-01M2 | N | 9/29/1997 | SW8330 | 4.6 |
| MW-01M2 | N | 3/1/1999 | SW8330 | 2.2 |
| MW-01M2 | N | 9/7/1999 | SW8330 | 1.1 |
| MW-01M2 | N | 5/10/2000 | SW8330 | 3.9 |
| MW-01M2 | N | 7/31/2000 | SW8330 | 3.4 J |
| MW-01M2 | N | 11/18/2000 | SW8330 | 8.1 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-01M2 | FD | 11/18/2000 | SW8330 | 8 |
| MW-01M2 | N | 5/1/2001 | SW8330 | 7.8 |
| MW-01M2 | N | 8/15/2001 | SW8330 | 11 |
| MW-01M2 | N | 11/30/2001 | SW8330 | 8.9 |
| MW-01M2 | N | 5/22/2002 | SW8330 | 2.4 |
| MW-01M2 | N | 8/9/2002 | SW8330 | 1.2 |
| MW-01M2 | N | 1/15/2003 | SW8330 | 3.2 |
| MW-01M2 | N | 5/13/2003 | SW8330 | 5.7 |
| MW-01M2 | N | 11/17/2003 | SW8330 | 7.4 |
| MW-01M2 | N | 2/25/2004 | SW8330 | 6.8 |
| MW-01M2 | N | 4/26/2004 | SW8330 | 0.84 |
| MW-01M2 | N | 9/28/2004 | SW8330 | 8.3 |
| MW-01M2 | N | 12/21/2004 | SW8330 | 6.5 J |
| MW-01M2 | N | 4/28/2005 | SW8330 | 3 |
| MW-01M2 | N | 9/6/2005 | SW8330 | 6 |
| MW-01M2 | FD | 9/6/2005 | SW8330 | 6.5 |
| MW-01M2 | N | 12/14/2005 | SW8330 | 9.5 |
| MW-01M2 | FD | 12/14/2005 | SW8330 | 10 |
| MW-01M2 | N | 10/3/2006 | SW8330 | 4.5 |
| MW-01M2 | N | 5/22/2007 | SW8330 | 0.78 |
| MW-01M2 | N | 12/6/2007 | SW8330 | 2.3 |
| MW-01M2 | N | 6/3/2008 | SW8330 | 4.1 |
| MW-01M2 | N | 11/13/2008 | SW8330 | 4.2 |
| MW-01M2 | N | 6/1/2009 | SW8330 | 3.2 |
| MW-01M2 | N | 12/22/2009 | SW8330 | 2.5 |
| MW-01M2 | N | 6/23/2010 | SW8330 | 0.33 |
| MW-01M2 | N | 11/15/2010 | SW8330 | 1.26 |
| MW-01M2 | N | 5/31/2011 | SW8330 | 0.81 |
| MW-01M2 | N | 11/18/2011 | SW8330 | 1.62 |
| MW-01S | FD | 9/30/1997 | SW8330 | 2.4 |
| MW-01S | N | 9/30/1997 | SW8330 | 2.5 |
| MW-01S | N | 2/22/1999 | SW8330 | 2.8 |
| MW-01S | N | 9/7/1999 | SW8330 | 2.5 |
| MW-01S | N | 5/31/2000 | SW8330 | 3.1 J |
| MW-01S | N | 7/31/2000 | SW8330 | 3.8 J |
| MW-01S | N | 11/18/2000 | SW8330 | 5.2 |
| MW-01S | N | 12/12/2000 | SW8330 | 6.1 J |
| MW-01S | FD | 12/12/2000 | SW8330 | 5.4 |
| MW-01S | N | 12/12/2000 | SW8095 | 11 |
| MW-01S | N | 12/12/2000 | SW8095 | 12 J |
| MW-01S | N | 12/12/2000 | SW8321 | 5.5 |
| MW-01S | N | 12/12/2000 | SW8321 | 5.3 |
| MW-01S | N | 8/16/2001 | SW8330 | 4.3 |
| MW-01S | N | 1/10/2002 | SW8330 | 5.2 J |
| MW-01S | N | 5/14/2003 | SW8330 | 2.1 |
| MW-01S | N | 11/14/2003 | SW8330 | 3.1 |
| MW-01S | N | 2/25/2004 | SW8330 | 3.6 |

# Table A2
# Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-01S | N | 4/28/2005 | SW8330 | 1.9 |
| MW-01S | N | 9/6/2005 | SW8330 | 2.6 |
| MW-01S | N | 12/14/2005 | SW8330 | 3.4 |
| MW-01S | N | 5/1/2006 | SW8330 | 3.1 |
| MW-01S | N | 5/22/2007 | SW8330 | 1.3 |
| MW-01S | N | 6/3/2008 | SW8330 | 1.8 |
| MW-01S | N | 6/1/2009 | SW8330 | 2.5 |
| MW-01S | N | 6/23/2010 | SW8330 | 2.4 |
| MW-01S | N | 6/9/2011 | SW8330 | 1.46 |
| MW-02M2 | N | 1/20/1998 | SW8330 | 13 |
| MW-02M2 | N | 2/3/1999 | SW8330 | 6.8 |
| MW-02M2 | N | 9/3/1999 | SW8330 | 5.8 |
| MW-02M2 | N | 5/11/2000 | SW8330 | 3.3 J |
| MW-02M2 | N | 8/2/2000 | SW8330 | 4.1 |
| MW-02M2 | N | 11/27/2000 | SW8330 | 4.1 |
| MW-02M2 | N | 5/3/2001 | SW8330 | 3.1 |
| MW-02M2 | N | 8/21/2001 | SW8330 | 4.5 |
| MW-02M2 | N | 11/19/2001 | SW8330 | 6 |
| MW-02M2 | N | 5/1/2002 | SW8330 | 4 J |
| MW-02M2 | N | 9/16/2002 | SW8330 | 2.1 |
| MW-02M2 | FD | 1/16/2003 | SW8330 | 3.3 |
| MW-02M2 | N | 1/16/2003 | SW8330 | 3.3 |
| MW-02M2 | N | 7/18/2003 | SW8330 | 3.6 |
| MW-02M2 | N | 11/19/2003 | SW8330 | 4.1 |
| MW-02M2 | N | 2/27/2004 | SW8330 | 4.5 J |
| MW-02M2 | N | 4/26/2004 | SW8330 | 4.7 |
| MW-02M2 | N | 10/13/2004 | SW8330 | 2.8 J |
| MW-02M2 | N | 11/9/2004 | SW8330 | 2.9 |
| MW-02M2 | N | 5/4/2005 | SW8330 | 1 |
| MW-02M2 | N | 8/10/2005 | SW8330 | 1.3 J |
| MW-02M2 | N | 12/14/2005 | SW8330 | 2.3 |
| MW-02M2 | N | 4/24/2006 | SW8330 | 2 |
| MW-02M2 | N | 10/25/2006 | SW8330 | 3 |
| MW-02M2 | N | 5/7/2007 | SW8330 | 1.5 |
| MW-02M2 | N | 5/27/2008 | SW8330 | 0.7 |
| MW-02M2 | N | 11/14/2008 | SW8330 | 1.2 |
| MW-02M2 | N | 6/5/2009 | SW8330 | 0.93 |
| MW-02M2 | N | 12/29/2009 | SW8330 | 0.38 |
| MW-02M2 | N | 5/27/2010 | SW8330 | 0.6 |
| MW-02M2 | N | 11/18/2010 | SW8330 | 0.37 |
| MW-02M2 | N | 6/16/2011 | SW8330 | 0.52 |
| MW-02M2 | N | 11/16/2011 | SW8330 | 0.68 |
| MW-03M2 | N | 3/11/1998 | SW8330 | 0.039 U |
| MW-03M2 | N | 2/5/1999 | SW8330 | 0.25 U |
| MW-03M2 | N | 9/7/1999 | SW8330 | 0.25 U |
| MW-03M2 | N | 8/2/2000 | SW8330 | 0.25 U |
| MW-03M2 | N | 7/27/2001 | SW8330 | 0.25 U |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-03M2 | N | 8/15/2002 | SW8330 | 0.25 U |
| MW-03M2 | N | 5/9/2003 | SW8330 | 0.25 U |
| MW-03M2 | FD | 5/9/2003 | SW8330 | 0.25 U |
| MW-03M2 | N | 10/6/2004 | SW8330 | 10 U |
| MW-03M2 | N | 8/12/2005 | SW8330 | 0.25 U |
| MW-03M2 | FD | 4/20/2006 | SW8330 | 0.25 U |
| MW-03M2 | N | 4/20/2006 | SW8330 | 0.25 U |
| MW-03M2 | N | 5/29/2007 | SW8330 | 0.25 U |
| MW-03M2 | N | 5/19/2008 | SW8330 | 0.25 U |
| MW-03M2 | N | 6/25/2009 | SW8330 | 0.25 U |
| MW-03M2 | N | 6/7/2010 | SW8330 | 0.2 U |
| MW-03M2 | N | 6/16/2011 | SW8330 | 0.2 U |
| MW-100M1 | FD | 6/6/2000 | SW8330 | 4.3 |
| MW-100M1 | N | 6/6/2000 | SW8330 | 4.3 |
| MW-100M1 | N | 10/2/2000 | SW8330 | 3.9 |
| MW-100M1 | N | 1/27/2001 | SW8330 | 3.9 |
| MW-100M1 | FD | 10/23/2001 | SW8330 | 2.9 |
| MW-100M1 | N | 10/23/2001 | SW8330 | 2.9 |
| MW-100M1 | N | 11/27/2001 | SW8330 | 3 |
| MW-100M1 | N | 5/21/2002 | SW8330 | 2.1 |
| MW-100M1 | N | 9/10/2002 | SW8330 | 1.7 |
| MW-100M1 | N | 11/21/2002 | SW8330 | 1.4 |
| MW-100M1 | N | 6/5/2003 | SW8330 | 1.4 |
| MW-100M1 | N | 10/15/2003 | SW8330 | 1.8 |
| MW-100M1 | N | 2/26/2004 | SW8330 | 1.9 |
| MW-100M1 | N | 7/15/2004 | SW8330 | 1.8 |
| MW-100M1 | N | 9/24/2004 | SW8330 | 2 |
| MW-100M1 | N | 1/11/2005 | SW8330 | 2.1 |
| MW-100M1 | FD | 5/20/2005 | SW8330 | 2 |
| MW-100M1 | N | 5/20/2005 | SW8330 | 2.1 |
| MW-100M1 | N | 8/22/2005 | SW8330 | 2.2 |
| MW-100M1 | N | 1/23/2006 | SW8330 | 2 |
| MW-100M1 | N | 4/19/2006 | SW8330 | 1.9 |
| MW-100M1 | N | 11/15/2006 | SW8330 | 1.5 |
| MW-100M1 | N | 5/18/2007 | SW8330 | 1.4 |
| MW-100M1 | N | 5/20/2008 | SW8330 | 1.7 |
| MW-100M1 | N | 11/12/2008 | SW8330 | 1.9 |
| MW-100M1 | N | 6/5/2009 | SW8330 | 1.9 |
| MW-100M1 | N | 12/22/2009 | SW8330 | 2 |
| MW-100M1 | N | 12/22/2009 | SW8330 | 2 |
| MW-100M1 | N | 5/27/2010 | SW8330 | 1.8 |
| MW-100M1 | N | 11/18/2010 | SW8330 | 2.67 |
| MW-100M1 | N | 6/14/2011 | SW8330 | 2.12 |
| MW-100M1 | N | 11/15/2011 | SW8330 | 2.04 |
| MW-101M1 | N | 6/6/2000 | SW8330 | 2.5 |
| MW-101M1 | N | 10/2/2000 | SW8330 | 1.5 |
| MW-101M1 | N | 1/22/2001 | SW8330 | 1.5 J |

# Table A2
# Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-101M1 | N | 10/23/2001 | SW8330 | 3.3 |
| MW-101M1 | N | 11/27/2001 | SW8330 | 4 |
| MW-101M1 | N | 5/21/2002 | SW8330 | 2.2 |
| MW-101M1 | N | 9/19/2002 | SW8330 | 3.8 |
| MW-101M1 | N | 11/21/2002 | SW8330 | 2.7 |
| MW-101M1 | N | 5/16/2003 | SW8330 | 1.6 |
| MW-101M1 | N | 11/14/2003 | SW8330 | 1.2 |
| MW-101M1 | N | 2/26/2004 | SW8330 | 2.1 |
| MW-101M1 | FD | 2/26/2004 | SW8330 | 2.1 |
| MW-101M1 | N | 5/5/2004 | SW8330 | 2.9 |
| MW-101M1 | N | 9/24/2004 | SW8330 | 2.7 |
| MW-101M1 | N | 11/18/2004 | SW8330 | 2.8 |
| MW-101M1 | N | 4/29/2005 | SW8330 | 1.4 |
| MW-101M1 | N | 10/3/2005 | SW8330 | 1.8 J |
| MW-101M1 | N | 1/19/2006 | SW8330 | 2.1 |
| MW-101M1 | N | 11/15/2006 | SW8330 | 4 |
| MW-101M1 | N | 6/12/2007 | SW8330 | 3.6 |
| MW-101M1 | N | 5/22/2008 | SW8330 | 2.6 |
| MW-101M1 | N | 6/24/2009 | SW8330 | 1.2 |
| MW-101M1 | N | 5/27/2010 | SW8330 | 0.55 |
| MW-101M1 | N | 6/9/2011 | SW8330 | 2.87 |
| MW-102M2 | N | 6/7/2000 | SW8330 | 0.25 U |
| MW-102M2 | N | 9/19/2000 | SW8330 | 0.25 U |
| MW-102M2 | N | 1/5/2001 | SW8330 | 0.25 U |
| MW-102M2 | N | 10/4/2001 | SW8330 | 0.25 U |
| MW-102M2 | N | 12/6/2001 | SW8330 | 0.25 U |
| MW-102M2 | N | 5/3/2002 | SW8330 | 0.25 U |
| MW-102M2 | N | 9/12/2002 | SW8330 | 0.25 U |
| MW-102M2 | N | 1/13/2003 | SW8330 | 0.25 U |
| MW-102M2 | N | 4/29/2003 | SW8330 | 0.25 U |
| MW-102M2 | N | 10/7/2003 | SW8330 | 0.25 U |
| MW-102M2 | N | 12/31/2003 | SW8330 | 0.25 U |
| MW-102M2 | N | 7/1/2004 | SW8330 | 0.25 U |
| MW-102M2 | N | 9/29/2004 | SW8330 | 0.25 U |
| MW-102M2 | N | 11/16/2004 | SW8330 | 0.25 U |
| MW-102M2 | N | 4/29/2005 | SW8330 | 0.25 U |
| MW-102M2 | N | 8/1/2005 | SW8330 | 0.25 U |
| MW-102M2 | N | 12/7/2005 | SW8330 | 0.29 J |
| MW-102M2 | N | 4/24/2006 | SW8330 | 0.25 U |
| MW-102M2 | N | 10/26/2006 | SW8330 | 3.8 |
| MW-102M2 | N | 5/15/2007 | SW8330 | 0.25 U |
| MW-102M2 | N | 10/24/2007 | SW8330 | 0.25 U |
| MW-102M2 | N | 6/5/2008 | SW8330 | 0.25 U |
| MW-102M2 | N | 12/8/2008 | SW8330 | 0.25 U |
| MW-102M2 | N | 6/11/2009 | SW8330 | 0.25 U |
| MW-102M2 | N | 12/8/2009 | SW8330 | 0.25 U |
| MW-102M2 | N | 5/26/2010 | SW8330 | 0.2 U |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-102M2 | N | 11/17/2010 | SW8330 | 0.2 U |
| MW-102M2 | N | 6/2/2011 | SW8330 | 0.2 U |
| MW-102M2 | N | 12/6/2011 | SW8330 | 0.2 U |
| MW-105M1 | N | 6/21/2000 | SW8330 | 5.9 |
| MW-105M1 | N | 11/7/2000 | SW8330 | 3.9 |
| MW-105M1 | N | 1/27/2001 | SW8330 | 3.3 |
| MW-105M1 | N | 10/22/2001 | SW8330 | 2.1 J |
| MW-105M1 | N | 11/26/2001 | SW8330 | 2.1 |
| MW-105M1 | N | 5/21/2002 | SW8330 | 2.3 |
| MW-105M1 | N | 9/19/2002 | SW8330 | 1.8 |
| MW-105M1 | N | 1/29/2003 | SW8330 | 1.2 |
| MW-105M1 | N | 4/14/2003 | SW8330 | 1.1 |
| MW-105M1 | N | 10/8/2003 | SW8330 | 0.77 |
| MW-105M1 | N | 1/5/2004 | SW8330 | 0.65 |
| MW-105M1 | N | 5/6/2004 | SW8330 | 0.74 |
| MW-105M1 | N | 9/28/2004 | SW8330 | 1.4 |
| MW-105M1 | N | 12/21/2004 | SW8330 | 2.6 |
| MW-105M1 | N | 5/2/2005 | SW8330 | 4.6 |
| MW-105M1 | N | 8/2/2005 | SW8330 | 4.7 |
| MW-105M1 | N | 1/23/2006 | SW8330 | 4.8 |
| MW-105M1 | N | 5/2/2006 | SW8330 | 4.3 |
| MW-105M1 | N | 10/17/2006 | SW8330 | 2.8 |
| MW-105M1 | N | 5/24/2007 | SW8330 | 1.8 |
| MW-105M1 | N | 12/7/2007 | SW8330 | 1 |
| MW-105M1 | N | 5/23/2008 | SW8330 | 0.88 |
| MW-105M1 | N | 11/12/2008 | SW8330 | 0.96 |
| MW-105M1 | N | 6/16/2009 | SW8330 | 1.4 |
| MW-105M1 | N | 12/16/2009 | SW8330 | 1 |
| MW-105M1 | N | 6/1/2010 | SW8330 | 0.64 |
| MW-105M1 | N | 11/23/2010 | SW8330 | 0.4 |
| MW-105M1 | N | 6/17/2011 | SW8330 | 0.39 |
| MW-105M1 | N | 11/16/2011 | SW8330 | 0.56 |
| MW-106M1 | N | 6/19/2000 | SW8330 | 0.25 U |
| MW-106M1 | N | 11/7/2000 | SW8330 | 0.25 U |
| MW-106M1 | N | 1/27/2001 | SW8330 | 0.25 U |
| MW-106M1 | N | 10/22/2001 | SW8330 | 0.25 U |
| MW-106M1 | N | 11/26/2001 | SW8330 | 0.25 U |
| MW-106M1 | N | 5/22/2002 | SW8330 | 0.25 U |
| MW-106M1 | N | 8/15/2002 | SW8330 | 0.25 U |
| MW-106M1 | FD | 8/15/2002 | SW8330 | 0.25 U |
| MW-106M1 | N | 1/27/2003 | SW8330 | 0.25 U |
| MW-106M1 | N | 4/29/2003 | SW8330 | 0.25 U |
| MW-106M1 | N | 10/8/2003 | SW8330 | 0.25 U |
| MW-106M1 | N | 2/13/2004 | SW8330 | 0.25 U |
| MW-106M1 | N | 9/23/2004 | SW8330 | 0.25 U |
| MW-106M1 | N | 8/3/2005 | SW8330 | 0.25 U |
| MW-106M1 | N | 6/30/2008 | SW8330 | 0.25 U |

# Table A2
# Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-106M1 | N | 5/15/2009 | SW8330 | 0.25 U |
| MW-106M1 | N | 10/26/2009 | SW8330 | 0.25 U |
| MW-106M1 | N | 5/27/2010 | SW8330 | 0.2 U |
| MW-106M1 | N | 11/3/2010 | SW8330 | 0.2 U |
| MW-106M1 | N | 5/23/2011 | SW8330 | 0.2 U |
| MW-106M1 | N | 12/5/2011 | SW8330 | 0.2 U |
| MW-107M2 | N | 6/21/2000 | SW8330 | 4 |
| MW-107M2 | N | 11/7/2000 | SW8330 | 3.1 |
| MW-107M2 | N | 1/27/2001 | SW8330 | 1.8 |
| MW-107M2 | FD | 1/27/2001 | SW8330 | 1.8 |
| MW-107M2 | N | 10/22/2001 | SW8330 | 3.4 |
| MW-107M2 | N | 11/29/2001 | SW8330 | 2.2 J |
| MW-107M2 | FD | 11/29/2001 | SW8330 | 2.2 J |
| MW-107M2 | N | 5/22/2002 | SW8330 | 1.6 |
| MW-107M2 | N | 9/12/2002 | SW8330 | 2.7 |
| MW-107M2 | N | 11/22/2002 | SW8330 | 2.8 |
| MW-107M2 | N | 4/9/2003 | SW8330 | 2.2 J |
| MW-107M2 | N | 11/10/2003 | SW8330 | 1.8 |
| MW-107M2 | N | 3/2/2004 | SW8330 | 3.4 |
| MW-107M2 | N | 4/26/2004 | SW8330 | 2.4 |
| MW-107M2 | N | 9/23/2004 | SW8330 | 1.1 |
| MW-107M2 | N | 12/21/2004 | SW8330 | 0.25 UJ |
| MW-107M2 | N | 4/27/2005 | SW8330 | 2.7 |
| MW-107M2 | FD | 4/27/2005 | SW8330 | 2.7 |
| MW-107M2 | N | 9/12/2005 | SW8330 | 3.9 |
| MW-107M2 | N | 12/14/2005 | SW8330 | 1.2 |
| MW-107M2 | N | 4/24/2006 | SW8330 | 3 |
| MW-107M2 | FD | 5/31/2007 | SW8330 | 3.7 |
| MW-107M2 | N | 5/31/2007 | SW8330 | 3.4 |
| MW-107M2 | N | 5/23/2008 | SW8330 | 4.3 |
| MW-107M2 | FD | 5/23/2008 | SW8330 | 4.3 |
| MW-107M2 | N | 6/23/2009 | SW8330 | 2.5 |
| MW-107M2 | N | 6/24/2010 | SW8330 | 1.2 |
| MW-107M2 | N | 6/10/2011 | SW8330 | 2.46 |
| MW-110M2 | N | 9/22/2000 | SW8330 | 0.25 U |
| MW-110M2 | N | 1/15/2001 | SW8330 | 0.25 U |
| MW-110M2 | N | 4/24/2001 | SW8330 | 0.25 U |
| MW-110M2 | N | 12/5/2001 | SW8330 | 0.25 U |
| MW-110M2 | FD | 5/7/2002 | SW8330 | 0.25 U |
| MW-110M2 | N | 5/7/2002 | SW8330 | 0.25 U |
| MW-110M2 | N | 9/16/2002 | SW8330 | 0.25 U |
| MW-110M2 | N | 1/10/2003 | SW8330 | 0.25 U |
| MW-110M2 | N | 4/30/2003 | SW8330 | 0.25 U |
| MW-110M2 | N | 10/9/2003 | SW8330 | 0.25 U |
| MW-110M2 | FD | 10/9/2003 | SW8330 | 0.25 U |
| MW-110M2 | N | 1/22/2004 | SW8330 | 0.25 U |
| MW-110M2 | N | 7/8/2004 | SW8330 | 0.25 U |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-110M2 | N | 8/13/2004 | SW8330 | 0.25 U |
| MW-110M2 | N | 11/16/2004 | SW8330 | 0.25 U |
| MW-110M2 | N | 3/31/2005 | SW8330 | 0.25 U |
| MW-110M2 | N | 8/3/2005 | SW8330 | 0.25 U |
| MW-110M2 | N | 12/8/2005 | SW8330 | 0.25 U |
| MW-110M2 | FD | 12/8/2005 | SW8330 | 0.25 U |
| MW-110M2 | N | 10/11/2006 | SW8330 | 0.25 U |
| MW-110M2 | FD | 10/11/2006 | SW8330 | 0.25 U |
| MW-110M2 | N | 5/15/2007 | SW8330 | 0.25 U |
| MW-110M2 | N | 10/24/2007 | SW8330 | 0.25 U |
| MW-110M2 | N | 6/5/2008 | SW8330 | 0.25 U |
| MW-110M2 | N | 12/9/2008 | SW8330 | 0.25 U |
| MW-110M2 | N | 6/15/2009 | SW8330 | 0.25 U |
| MW-110M2 | N | 12/14/2009 | SW8330 | 0.25 U |
| MW-110M2 | N | 5/25/2010 | SW8330 | 0.2 U |
| MW-110M2 | N | 12/8/2010 | SW8330 | 0.2 U |
| MW-110M2 | N | 5/26/2011 | SW8330 | 0.2 U |
| MW-110M2 | N | 12/6/2011 | SW8330 | 0.2 U |
| MW-111M2 | N | 10/10/2000 | SW8330 | 0.25 U |
| MW-111M2 | N | 1/17/2001 | SW8330 | 0.25 U |
| MW-111M2 | N | 4/25/2001 | SW8330 | 0.25 U |
| MW-111M2 | N | 12/4/2001 | SW8330 | 0.25 U |
| MW-111M2 | N | 6/11/2002 | SW8330 | 0.26 J |
| MW-111M2 | N | 9/18/2002 | SW8330 | 0.37 J |
| MW-111M2 | N | 11/21/2002 | SW8330 | 0.69 |
| MW-111M2 | N | 4/10/2003 | SW8330 | 0.35 |
| MW-111M2 | N | 9/19/2003 | SW8330 | 0.25 U |
| MW-111M2 | N | 2/20/2004 | SW8330 | 0.25 U |
| MW-111M2 | N | 7/15/2004 | SW8330 | 0.25 U |
| MW-111M2 | N | 8/19/2004 | SW8330 | 0.25 U |
| MW-111M2 | N | 3/7/2005 | SW8330 | 0.25 U |
| MW-111M2 | N | 5/12/2005 | SW8330 | 0.25 U |
| MW-111M2 | N | 8/19/2005 | SW8330 | 0.25 U |
| MW-111M2 | N | 12/28/2005 | SW8330 | 0.25 U |
| MW-111M2 | N | 4/27/2006 | SW8330 | 0.25 U |
| MW-111M2 | FD | 4/27/2006 | SW8330 | 0.25 U |
| MW-111M2 | N | 5/8/2007 | SW8330 | 0.25 U |
| MW-111M2 | N | 6/2/2008 | SW8330 | 1.2 |
| MW-111M2 | N | 6/3/2009 | SW8330 | 0.67 |
| MW-111M2 | N | 6/9/2010 | SW8330 | 0.2 U |
| MW-111M2 | N | 6/7/2011 | SW8330 | 0.2 U |
| MW-112M1 | N | 9/26/2000 | SW8330 | 0.74 |
| MW-112M1 | N | 1/16/2001 | SW8330 | 0.25 U |
| MW-112M1 | N | 5/1/2001 | SW8330 | 1.2 |
| MW-112M1 | N | 11/27/2001 | SW8330 | 0.25 U |
| MW-112M1 | N | 5/13/2002 | SW8330 | 0.35 J |
| MW-112M1 | FD | 9/18/2002 | SW8330 | 0.46 |

# Table A2
# Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-112M1 | N | 9/18/2002 | SW8330 | 0.44 |
| MW-112M1 | N | 12/4/2002 | SW8330 | 0.35 J |
| MW-112M1 | N | 4/25/2003 | SW8330 | 0.28 |
| MW-112M1 | N | 10/30/2003 | SW8330 | 0.25 U |
| MW-112M1 | N | 2/19/2004 | SW8330 | 0.28 |
| MW-112M1 | N | 7/15/2004 | SW8330 | 0.66 |
| MW-112M1 | N | 8/16/2004 | SW8330 | 0.74 J |
| MW-112M1 | N | 11/9/2004 | SW8330 | 0.59 |
| MW-112M1 | N | 3/28/2005 | SW8330 | 0.25 U |
| MW-112M1 | N | 8/29/2005 | SW8330 | 0.25 U |
| MW-112M1 | N | 12/14/2005 | SW8330 | 0.25 U |
| MW-112M1 | N | 4/19/2006 | SW8330 | 0.39 |
| MW-112M1 | N | 5/4/2007 | SW8330 | 0.55 |
| MW-112M1 | N | 5/27/2008 | SW8330 | 0.42 |
| MW-112M1 | N | 6/5/2009 | SW8330 | 0.25 U |
| MW-112M1 | N | 6/1/2010 | SW8330 | 0.2 U |
| MW-112M1 | N | 6/20/2011 | SW8330 | 0.2 U |
| MW-112M2 | N | 9/26/2000 | SW8330 | 1.8 |
| MW-112M2 | FD | 1/16/2001 | SW8330 | 1.8 |
| MW-112M2 | N | 1/16/2001 | SW8330 | 1.8 |
| MW-112M2 | N | 5/1/2001 | SW8330 | 1.2 |
| MW-112M2 | FD | 5/1/2001 | SW8330 | 0.25 U |
| MW-112M2 | N | 11/27/2001 | SW8330 | 1.5 |
| MW-112M2 | N | 5/13/2002 | SW8330 | 1.9 |
| MW-112M2 | N | 9/18/2002 | SW8330 | 1.5 |
| MW-112M2 | N | 12/4/2002 | SW8330 | 1.8 |
| MW-112M2 | N | 4/25/2003 | SW8330 | 2 |
| MW-112M2 | N | 10/30/2003 | SW8330 | 2.1 |
| MW-112M2 | N | 2/19/2004 | SW8330 | 2.4 |
| MW-112M2 | N | 7/15/2004 | SW8330 | 1.3 |
| MW-112M2 | FD | 7/15/2004 | SW8330 | 1.3 |
| MW-112M2 | N | 8/16/2004 | SW8330 | 1.3 J |
| MW-112M2 | N | 11/9/2004 | SW8330 | 2.3 |
| MW-112M2 | N | 3/28/2005 | SW8330 | 2.2 |
| MW-112M2 | N | 8/29/2005 | SW8330 | 2.1 |
| MW-112M2 | N | 12/14/2005 | SW8330 | 1.7 J |
| MW-112M2 | N | 4/19/2006 | SW8330 | 2.2 |
| MW-112M2 | N | 10/17/2006 | SW8330 | 1.9 |
| MW-112M2 | N | 5/4/2007 | SW8330 | 2.4 |
| MW-112M2 | N | 10/17/2007 | SW8330 | 1.7 |
| MW-112M2 | N | 5/27/2008 | SW8330 | 2.3 |
| MW-112M2 | N | 11/12/2008 | SW8330 | 2.2 |
| MW-112M2 | N | 6/5/2009 | SW8330 | 1.3 |
| MW-112M2 | N | 12/16/2009 | SW8330 | 0.24 J |
| MW-112M2 | N | 6/1/2010 | SW8330 | 0.62 |
| MW-112M2 | N | 11/16/2010 | SW8330 | 0.2 U |
| MW-112M2 | N | 6/20/2011 | SW8330 | 0.2 U |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-112M2 | N | 11/16/2011 | SW8330 | 0.2 U |
| MW-113M2 | N | 9/26/2000 | SW8330 | 9.2 |
| MW-113M2 | N | 1/15/2001 | SW8330 | 11 |
| MW-113M2 | N | 4/30/2001 | SW8330 | 15 |
| MW-113M2 | N | 12/3/2001 | SW8330 | 12 |
| MW-113M2 | N | 5/9/2002 | SW8330 | 7 |
| MW-113M2 | N | 9/17/2002 | SW8330 | 5.5 |
| MW-113M2 | N | 11/26/2002 | SW8330 | 4.2 |
| MW-113M2 | N | 4/30/2003 | SW8330 | 4.9 |
| MW-113M2 | FD | 4/30/2003 | SW8330 | 5 |
| MW-113M2 | N | 11/18/2003 | SW8330 | 7.6 |
| MW-113M2 | N | 2/19/2004 | SW8330 | 8.6 |
| MW-113M2 | FD | 2/19/2004 | SW8330 | 8.3 |
| MW-113M2 | N | 4/27/2004 | SW8330 | 8.5 |
| MW-113M2 | N | 8/10/2004 | SW8330 | 8.4 |
| MW-113M2 | N | 11/5/2004 | SW8330 | 8 |
| MW-113M2 | N | 3/28/2005 | SW8330 | 7.6 |
| MW-113M2 | N | 8/8/2005 | SW8330 | 9.8 J |
| MW-113M2 | N | 11/28/2005 | SW8330 | 9.8 |
| MW-113M2 | N | 5/2/2006 | SW8330 | 6 |
| MW-113M2 | N | 10/17/2006 | SW8330 | 2.1 |
| MW-113M2 | FD | 5/4/2007 | SW8330 | 3.9 |
| MW-113M2 | N | 5/4/2007 | SW8330 | 3.8 |
| MW-113M2 | N | 10/17/2007 | SW8330 | 5.9 |
| MW-113M2 | N | 5/27/2008 | SW8330 | 4.1 |
| MW-113M2 | FD | 5/27/2008 | SW8330 | 4 |
| MW-113M2 | N | 11/12/2008 | SW8330 | 2.9 |
| MW-113M2 | FD | 11/12/2008 | SW8330 | 2.9 |
| MW-113M2 | N | 6/10/2009 | SW8330 | 2.8 |
| MW-113M2 | N | 12/16/2009 | SW8330 | 5 |
| MW-113M2 | FD | 6/1/2010 | SW8330 | 3.7 |
| MW-113M2 | N | 6/1/2010 | SW8330 | 3.8 |
| MW-113M2 | N | 11/16/2010 | SW8330 | 1.97 |
| MW-113M2 | N | 6/17/2011 | SW8330 | 0.67 |
| MW-113M2 | N | 11/17/2011 | SW8330 | 1.44 |
| MW-115M1 | N | 7/22/2001 | SW8330 | 0.25 U |
| MW-115M1 | N | 10/25/2001 | SW8330 | 0.25 U |
| MW-115M1 | FD | 10/25/2001 | SW8330 | 0.25 U |
| MW-115M1 | N | 2/20/2002 | SW8330 | 0.25 U |
| MW-115M1 | N | 9/12/2002 | SW8330 | 0.25 U |
| MW-115M1 | N | 4/11/2003 | SW8330 | 0.25 U |
| MW-115M1 | N | 9/23/2004 | SW8330 | 0.25 U |
| MW-115M1 | FD | 9/23/2004 | SW8330 | 0.25 U |
| MW-115M1 | N | 10/6/2005 | SW8330 | 0.25 U |
| MW-115M1 | N | 4/20/2006 | SW8330 | 0.25 U |
| MW-115M1 | N | 5/23/2007 | SW8330 | 0.25 U |
| MW-115M1 | N | 6/17/2008 | SW8330 | 0.25 U |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-115M1 | N | 6/17/2009 | SW8330 | 0.25 U |
| MW-115M1 | N | 6/1/2010 | SW8330 | 0.2 U |
| MW-115M1 | N | 6/15/2011 | SW8330 | 0.2 U |
| MW-123M1 | N | 10/19/2000 | SW8330 | 0.25 U |
| MW-123M1 | N | 1/16/2001 | SW8330 | 0.25 U |
| MW-123M1 | N | 4/25/2001 | SW8330 | 0.25 U |
| MW-123M1 | N | 12/6/2001 | SW8330 | 0.25 U |
| MW-123M1 | N | 5/7/2002 | SW8330 | 0.25 U |
| MW-123M1 | N | 8/12/2002 | SW8330 | 0.25 U |
| MW-123M1 | N | 1/13/2003 | SW8330 | 0.25 U |
| MW-123M1 | N | 4/8/2003 | SW8330 | 0.25 U |
| MW-123M1 | N | 10/1/2003 | SW8330 | 0.25 U |
| MW-123M1 | N | 1/27/2004 | SW8330 | 0.25 U |
| MW-123M1 | N | 7/9/2004 | SW8330 | 0.25 U |
| MW-123M1 | N | 9/17/2004 | SW8330 | 0.25 U |
| MW-123M1 | N | 11/15/2004 | SW8330 | 0.25 U |
| MW-123M1 | N | 3/30/2005 | SW8330 | 0.25 U |
| MW-123M1 | N | 8/18/2005 | SW8330 | 0.25 U |
| MW-123M1 | N | 12/7/2005 | SW8330 | 0.25 U |
| MW-123M1 | N | 4/17/2006 | SW8330 | 0.25 U |
| MW-123M1 | FD | 10/12/2006 | SW8330 | 0.25 U |
| MW-123M1 | N | 10/12/2006 | SW8330 | 0.25 U |
| MW-123M1 | N | 5/14/2007 | SW8330 | 0.25 U |
| MW-123M1 | N | 10/24/2007 | SW8330 | 0.25 U |
| MW-123M1 | N | 6/9/2008 | SW8330 | 0.31 |
| MW-123M1 | N | 11/24/2008 | SW8330 | 0.49 |
| MW-123M1 | N | 6/12/2009 | SW8330 | 0.75 |
| MW-123M1 | N | 12/28/2009 | SW8330 | 1.1 |
| MW-123M1 | N | 5/25/2010 | SW8330 | 1.5 |
| MW-123M1 | N | 11/18/2010 | SW8330 | 2.13 |
| MW-123M1 | N | 6/22/2011 | SW8330 | 3.44 |
| MW-123M1 | N | 12/5/2011 | SW8330 | 5.49 |
| MW-123M1 | FD | 12/5/2011 | SW8330 | 5.48 |
| MW-123M2 | N | 10/19/2000 | SW8330 | 0.25 U |
| MW-123M2 | FD | 10/19/2000 | SW8330 | 0.25 U |
| MW-123M2 | N | 1/16/2001 | SW8330 | 0.25 U |
| MW-123M2 | N | 4/25/2001 | SW8330 | 0.25 U |
| MW-123M2 | N | 12/6/2001 | SW8330 | 0.25 U |
| MW-123M2 | N | 5/7/2002 | SW8330 | 0.25 U |
| MW-123M2 | N | 8/12/2002 | SW8330 | 0.25 U |
| MW-123M2 | N | 1/13/2003 | SW8330 | 0.25 U |
| MW-123M2 | N | 4/8/2003 | SW8330 | 0.25 U |
| MW-123M2 | N | 10/1/2003 | SW8330 | 0.29 J |
| MW-123M2 | FD | 10/1/2003 | SW8330 | 0.28 J |
| MW-123M2 | N | 2/10/2004 | SW8330 | 0.44 |
| MW-123M2 | N | 7/9/2004 | SW8330 | 0.45 |
| MW-123M2 | N | 9/17/2004 | SW8330 | 0.39 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-123M2 | N | 11/23/2004 | SW8330 | 0.46 |
| MW-123M2 | N | 3/30/2005 | SW8330 | 0.34 |
| MW-123M2 | FD | 3/30/2005 | SW8330 | 0.4 |
| MW-123M2 | N | 8/18/2005 | SW8330 | 0.42 J |
| MW-123M2 | N | 12/7/2005 | SW8330 | 0.45 |
| MW-123M2 | FD | 12/7/2005 | SW8330 | 0.42 |
| MW-123M2 | N | 4/17/2006 | SW8330 | 0.41 |
| MW-123M2 | N | 10/12/2006 | SW8330 | 0.45 J |
| MW-123M2 | N | 5/14/2007 | SW8330 | 0.42 |
| MW-123M2 | FD | 5/14/2007 | SW8330 | 0.44 |
| MW-123M2 | N | 10/24/2007 | SW8330 | 0.34 |
| MW-123M2 | N | 6/9/2008 | SW8330 | 0.25 |
| MW-123M2 | N | 11/24/2008 | SW8330 | 0.25 U |
| MW-123M2 | N | 6/12/2009 | SW8330 | 0.25 U |
| MW-123M2 | N | 12/28/2009 | SW8330 | 0.21 |
| MW-123M2 | N | 5/25/2010 | SW8330 | 0.2 U |
| MW-123M2 | N | 11/18/2010 | SW8330 | 0.2 U |
| MW-123M2 | N | 6/22/2011 | SW8330 | 0.28 |
| MW-123M2 | N | 12/5/2011 | SW8330 | 0.24 |
| MW-135M2 | N | 1/9/2001 | SW8330 | 1.4 |
| MW-135M2 | N | 4/26/2001 | SW8330 | 1.2 |
| MW-135M2 | N | 10/4/2001 | SW8330 | 0.87 |
| MW-135M2 | FD | 12/18/2001 | SW8330 | 0.88 |
| MW-135M2 | N | 12/18/2001 | SW8330 | 0.91 |
| MW-135M2 | N | 5/7/2002 | SW8330 | 0.73 |
| MW-135M2 | N | 9/23/2002 | SW8330 | 0.74 |
| MW-135M2 | N | 1/10/2003 | SW8330 | 0.71 |
| MW-135M2 | N | 4/9/2003 | SW8330 | 0.6 |
| MW-135M2 | N | 10/8/2003 | SW8330 | 0.38 J |
| MW-135M2 | N | 1/26/2004 | SW8330 | 0.33 |
| MW-135M2 | N | 5/17/2004 | SW8330 | 0.31 |
| MW-135M2 | N | 8/12/2004 | SW8330 | 0.3 |
| MW-135M2 | N | 11/23/2004 | SW8330 | 0.31 |
| MW-135M2 | N | 4/28/2005 | SW8330 | 0.25 U |
| MW-135M2 | N | 10/3/2005 | SW8330 | 0.25 UJ |
| MW-135M2 | FD | 10/3/2005 | SW8330 | 0.25 UJ |
| MW-135M2 | N | 12/27/2005 | SW8330 | 0.25 U |
| MW-135M2 | N | 4/17/2006 | SW8330 | 0.25 |
| MW-135M2 | N | 5/15/2007 | SW8330 | 0.25 U |
| MW-135M2 | N | 6/6/2008 | SW8330 | 0.25 U |
| MW-135M2 | N | 6/19/2009 | SW8330 | 0.25 U |
| MW-135M2 | N | 5/26/2010 | SW8330 | 0.2 U |
| MW-135M2 | N | 6/14/2011 | SW8330 | 0.2 U |
| MW-149M1 | N | 3/13/2001 | SW8330 | 0.25 U |
| MW-149M1 | N | 6/25/2001 | SW8330 | 0.25 U |
| MW-149M1 | N | 11/9/2001 | SW8330 | 0.25 U |
| MW-149M1 | N | 6/9/2003 | SW8330 | 0.25 U |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-149M1 | N | 10/10/2003 | SW8330 | 0.25 U |
| MW-149M1 | N | 1/20/2004 | SW8330 | 0.25 U |
| MW-149M1 | N | 7/12/2004 | SW8330 | 0.25 U |
| MW-149M1 | N | 9/17/2004 | SW8330 | 0.25 U |
| MW-149M1 | FD | 9/17/2004 | SW8330 | 0.25 U |
| MW-149M1 | N | 2/28/2005 | SW8330 | 0.25 U |
| MW-149M1 | N | 5/10/2005 | SW8330 | 0.25 U |
| MW-149M1 | N | 10/5/2005 | SW8330 | 0.25 U |
| MW-149M1 | N | 1/5/2006 | SW8330 | 0.25 U |
| MW-149M1 | N | 10/19/2006 | SW8330 | 0.25 U |
| MW-149M1 | N | 5/14/2007 | SW8330 | 0.25 U |
| MW-149M1 | N | 6/24/2008 | SW8330 | 0.25 U |
| MW-149M1 | N | 6/29/2009 | SW8330 | 0.25 U |
| MW-149M1 | N | 6/24/2010 | SW8330 | 0.2 U |
| MW-149M1 | N | 6/6/2011 | SW8330 | 0.2 |
| MW-176M1 | N | 11/1/2001 | SW8330 | 0.25 U |
| MW-176M1 | N | 3/8/2002 | SW8330 | 0.29 |
| MW-176M1 | FD | 7/18/2002 | SW8330 | 0.48 |
| MW-176M1 | N | 7/18/2002 | SW8330 | 0.52 |
| MW-176M1 | N | 1/10/2003 | SW8330 | 1.4 |
| MW-176M1 | N | 4/1/2003 | SW8330 | 1.9 |
| MW-176M1 | N | 10/8/2003 | SW8330 | 2.6 |
| MW-176M1 | N | 1/9/2004 | SW8330 | 3 |
| MW-176M1 | N | 7/12/2004 | SW8330 | 5 |
| MW-176M1 | FD | 8/10/2004 | SW8330 | 5.4 |
| MW-176M1 | N | 8/10/2004 | SW8330 | 5.3 |
| MW-176M1 | N | 11/23/2004 | SW8330 | 7.1 |
| MW-176M1 | N | 4/4/2005 | SW8330 | 7.9 |
| MW-176M1 | N | 9/29/2005 | SW8330 | 8 J |
| MW-176M1 | N | 12/29/2005 | SW8330 | 8.2 |
| MW-176M1 | N | 4/17/2006 | SW8330 | 7.4 |
| MW-176M1 | N | 10/30/2006 | SW8330 | 7.8 |
| MW-176M1 | N | 5/16/2007 | SW8330 | 6.1 |
| MW-176M1 | N | 11/7/2007 | SW8330 | 6 |
| MW-176M1 | FD | 11/7/2007 | SW8330 | 6.2 |
| MW-176M1 | N | 6/11/2008 | SW8330 | 6.4 |
| MW-176M1 | N | 12/9/2008 | SW8330 | 5.5 |
| MW-176M1 | N | 6/18/2009 | SW8330 | 5.5 |
| MW-176M1 | N | 12/8/2009 | SW8330 | 6.2 |
| MW-176M1 | FD | 12/8/2009 | SW8330 | 6.5 |
| MW-176M1 | N | 5/25/2010 | SW8330 | 5.7 |
| MW-176M1 | FD | 5/25/2010 | SW8330 | 5.4 |
| MW-176M1 | N | 11/16/2010 | SW8330 | 3.7 |
| MW-176M1 | FD | 11/16/2010 | SW8330 | 3.78 |
| MW-176M1 | N | 6/13/2011 | SW8330 | 3.19 |
| MW-176M1 | FD | 6/13/2011 | SW8330 | 3.06 |
| MW-176M1 | N | 12/1/2011 | SW8330 | 3.25 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-178M1 | N | 10/31/2001 | SW8330 | 4.8 |
| MW-178M1 | N | 3/8/2002 | SW8330 | 4.6 J |
| MW-178M1 | N | 7/26/2002 | SW8330 | 4.3 |
| MW-178M1 | N | 1/13/2003 | SW8330 | 4.1 |
| MW-178M1 | N | 6/10/2003 | SW8330 | 2.4 |
| MW-178M1 | N | 11/17/2003 | SW8330 | 2.6 |
| MW-178M1 | N | 12/24/2003 | SW8330 | 2.8 |
| MW-178M1 | FD | 5/19/2004 | SW8330 | 3.5 |
| MW-178M1 | N | 5/19/2004 | SW8330 | 3.6 |
| MW-178M1 | N | 8/12/2004 | SW8330 | 4 |
| MW-178M1 | N | 12/29/2004 | SW8330 | 4.5 |
| MW-178M1 | N | 5/2/2005 | SW8330 | 5 |
| MW-178M1 | N | 9/6/2005 | SW8330 | 4.4 |
| MW-178M1 | N | 12/8/2005 | SW8330 | 3.2 |
| MW-178M1 | N | 4/13/2006 | SW8330 | 3 |
| MW-178M1 | N | 10/19/2006 | SW8330 | 2.5 |
| MW-178M1 | N | 5/16/2007 | SW8330 | 2 |
| MW-178M1 | N | 11/7/2007 | SW8330 | 1.4 |
| MW-178M1 | N | 6/27/2008 | SW8330 | 1.8 |
| MW-178M1 | N | 12/11/2008 | SW8330 | 2.8 |
| MW-178M1 | N | 6/23/2009 | SW8330 | 3.1 |
| MW-178M1 | N | 12/8/2009 | SW8330 | 2.7 |
| MW-178M1 | N | 5/25/2010 | SW8330 | 2.3 |
| MW-178M1 | N | 12/8/2010 | SW8330 | 2.03 |
| MW-178M1 | N | 6/8/2011 | SW8330 | 1.45 |
| MW-178M1 | N | 12/2/2011 | SW8330 | 1.85 |
| MW-179M1 | N | 10/31/2001 | SW8330 | 0.25 U |
| MW-179M1 | N | 4/15/2002 | SW8330 | 0.25 U |
| MW-179M1 | N | 7/25/2002 | SW8330 | 0.25 U |
| MW-179M1 | N | 5/8/2003 | SW8330 | 0.25 U |
| MW-179M1 | N | 7/23/2004 | SW8330 | 0.25 U |
| MW-179M1 | N | 8/24/2004 | SW8330 | 0.25 U |
| MW-179M1 | N | 5/2/2005 | SW8330 | 0.25 U |
| MW-179M1 | N | 9/1/2005 | SW8330 | 0.25 U |
| MW-179M1 | N | 10/17/2006 | SW8330 | 0.25 U |
| MW-179M1 | N | 5/4/2007 | SW8330 | 0.25 U |
| MW-179M1 | N | 5/27/2008 | SW8330 | 0.25 U |
| MW-179M1 | N | 6/10/2009 | SW8330 | 0.25 U |
| MW-179M1 | N | 6/1/2010 | SW8330 | 0.2 U |
| MW-179M1 | N | 6/20/2011 | SW8330 | 0.2 U |
| MW-180M3 | N | 2/5/2002 | SW8330 | 0.25 U |
| MW-180M3 | N | 6/21/2002 | SW8330 | 0.25 U |
| MW-180M3 | N | 10/9/2002 | SW8330 | 0.25 U |
| MW-180M3 | N | 6/11/2003 | SW8330 | 0.25 U |
| MW-180M3 | FD | 6/11/2003 | SW8330 | 0.25 U |
| MW-180M3 | N | 10/15/2003 | SW8330 | 0.25 U |
| MW-180M3 | FD | 10/15/2003 | SW8330 | 0.25 U |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-180M3 | N | 1/22/2004 | SW8330 | 0.25 U |
| MW-180M3 | FD | 5/14/2004 | SW8330 | 0.25 U |
| MW-180M3 | N | 5/14/2004 | SW8330 | 0.25 U |
| MW-180M3 | N | 8/10/2004 | SW8330 | 0.25 U |
| MW-180M3 | N | 12/22/2004 | SW8330 | 0.25 UJ |
| MW-180M3 | N | 4/1/2005 | SW8330 | 0.25 U |
| MW-180M3 | N | 10/6/2005 | SW8330 | 0.25 U |
| MW-180M3 | N | 1/17/2006 | SW8330 | 0.25 U |
| MW-180M3 | N | 10/30/2006 | SW8330 | 0.25 U |
| MW-180M3 | N | 5/8/2007 | SW8330 | 0.25 U |
| MW-180M3 | N | 10/18/2007 | SW8330 | 0.25 U |
| MW-180M3 | N | 5/30/2008 | SW8330 | 0.25 U |
| MW-180M3 | N | 12/11/2008 | SW8330 | 0.25 U |
| MW-180M3 | N | 6/4/2009 | SW8330 | 0.25 U |
| MW-180M3 | N | 12/14/2009 | SW8330 | 0.25 U |
| MW-180M3 | N | 6/14/2010 | SW8330 | 0.2 U |
| MW-180M3 | N | 11/5/2010 | SW8330 | 0.2 U |
| MW-180M3 | N | 6/1/2011 | SW8330 | 0.2 U |
| MW-180M3 | N | 11/21/2011 | SW8330 | 0.2 U |
| MW-183M1 | N | 1/24/2002 | SW8330 | 0.25 UJ |
| MW-183M1 | N | 6/21/2002 | SW8330 | 0.25 U |
| MW-183M1 | FD | 6/21/2002 | SW8330 | 0.25 U |
| MW-183M1 | N | 10/10/2002 | SW8330 | 0.25 U |
| MW-183M1 | N | 6/4/2003 | SW8330 | 0.25 U |
| MW-183M1 | N | 10/2/2003 | SW8330 | 0.25 U |
| MW-183M1 | N | 2/10/2004 | SW8330 | 0.25 U |
| MW-183M1 | N | 8/26/2004 | SW8330 | 0.25 U |
| MW-183M1 | N | 10/28/2005 | SW8330 | 0.25 U |
| MW-183M1 | N | 4/13/2006 | SW8330 | 0.25 U |
| MW-183M1 | N | 10/26/2006 | SW8330 | 0.25 U |
| MW-183M1 | N | 5/16/2007 | SW8330 | 0.25 U |
| MW-183M1 | N | 11/8/2007 | SW8330 | 0.25 U |
| MW-183M1 | N | 6/6/2008 | SW8330 | 0.39 |
| MW-183M1 | N | 12/8/2008 | SW8330 | 0.25 U |
| MW-183M1 | N | 6/22/2009 | SW8330 | 0.36 |
| MW-183M1 | N | 12/28/2009 | SW8330 | 0.25 |
| MW-183M1 | N | 6/22/2010 | SW8330 | 3.8 J |
| MW-183M1 | N | 12/9/2010 | SW8330 | 0.2 U |
| MW-183M1 | N | 6/21/2011 | SW8330 | 0.2 U |
| MW-183M1 | N | 12/1/2011 | SW8330 | 0.2 U |
| MW-183M2 | N | 1/24/2002 | SW8330 | 0.25 UJ |
| MW-183M2 | N | 6/21/2002 | SW8330 | 0.25 U |
| MW-183M2 | N | 10/10/2002 | SW8330 | 0.25 U |
| MW-183M2 | FD | 10/10/2002 | SW8330 | 0.25 U |
| MW-183M2 | FD | 6/4/2003 | SW8330 | 0.25 U |
| MW-183M2 | N | 6/4/2003 | SW8330 | 0.25 U |
| MW-183M2 | FD | 10/2/2003 | SW8330 | 0.25 U |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-183M2 | N | 10/2/2003 | SW8330 | 0.25 U |
| MW-183M2 | N | 2/10/2004 | SW8330 | 0.25 U |
| MW-183M2 | N | 5/21/2004 | SW8330 | 0.25 U |
| MW-183M2 | N | 8/25/2004 | SW8330 | 0.25 U |
| MW-183M2 | N | 3/21/2005 | SW8330 | 0.25 U |
| MW-183M2 | N | 5/12/2005 | SW8330 | 0.25 U |
| MW-183M2 | N | 10/28/2005 | SW8330 | 0.25 U |
| MW-183M2 | N | 2/6/2006 | SW8330 | 0.25 U |
| MW-183M2 | N | 4/13/2006 | SW8330 | 0.25 U |
| MW-183M2 | N | 10/26/2006 | SW8330 | 0.25 U |
| MW-183M2 | N | 5/16/2007 | SW8330 | 0.25 U |
| MW-183M2 | N | 11/8/2007 | SW8330 | 0.25 U |
| MW-183M2 | N | 6/6/2008 | SW8330 | 0.25 U |
| MW-183M2 | N | 12/8/2008 | SW8330 | 0.46 |
| MW-183M2 | N | 6/22/2009 | SW8330 | 0.25 U |
| MW-183M2 | N | 12/28/2009 | SW8330 | 0.2 U |
| MW-183M2 | N | 6/22/2010 | SW8330 | 0.2 U |
| MW-183M2 | N | 12/9/2010 | SW8330 | 0.2 U |
| MW-183M2 | N | 6/21/2011 | SW8330 | 0.2 U |
| MW-183M2 | N | 12/1/2011 | SW8330 | 0.2 U |
| MW-184M1 | N | 1/24/2002 | SW8330 | 23 |
| MW-184M1 | N | 6/21/2002 | SW8330 | 24 |
| MW-184M1 | N | 9/18/2002 | SW8330 | 24 |
| MW-184M1 | FD | 9/18/2002 | SW8330 | 24 |
| MW-184M1 | N | 5/21/2003 | SW8330 | 24 |
| MW-184M1 | FD | 5/21/2003 | SW8330 | 24 |
| MW-184M1 | N | 10/30/2003 | SW8330 | 22 |
| MW-184M1 | N | 2/9/2004 | SW8330 | 21 |
| MW-184M1 | N | 2/9/2004 | SW8330 | 0 R |
| MW-184M1 | N | 5/18/2004 | SW8330 | 19 |
| MW-184M1 | N | 8/10/2004 | SW8330 | 19 |
| MW-184M1 | N | 2/9/2005 | SW8330 | 17 |
| MW-184M1 | N | 5/12/2005 | SW8330 | 17 |
| MW-184M1 | N | 11/1/2005 | SW8330 | 15 |
| MW-184M1 | N | 1/23/2006 | SW8330 | 0 R |
| MW-184M1 | N | 1/23/2006 | SW8330 | 10 |
| MW-184M1 | FD | 1/23/2006 | SW8330 | 0 R |
| MW-184M1 | FD | 1/23/2006 | SW8330 | 11 |
| MW-184M1 | FD | 4/26/2006 | SW8330 | 13 |
| MW-184M1 | N | 4/26/2006 | SW8330 | 13 |
| MW-184M1 | N | 11/29/2006 | SW8330 | 5.7 |
| MW-184M1 | FD | 5/11/2007 | SW8330 | 7.2 |
| MW-184M1 | N | 5/11/2007 | SW8330 | 6.7 |
| MW-184M1 | N | 11/26/2007 | SW8330 | 8.1 |
| MW-184M1 | FD | 5/30/2008 | SW8330 | 7 |
| MW-184M1 | N | 5/30/2008 | SW8330 | 6.9 |
| MW-184M1 | FD | 11/18/2008 | SW8330 | 7 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-184M1 | N | 11/18/2008 | SW8330 | 7.8 |
| MW-184M1 | N | 6/4/2009 | SW8330 | 8.3 |
| MW-184M1 | FD | 6/4/2009 | SW8330 | 8.4 |
| MW-184M1 | N | 12/29/2009 | SW8330 | 6.7 |
| MW-184M1 | FD | 6/9/2010 | SW8330 | 5.7 |
| MW-184M1 | N | 6/9/2010 | SW8330 | 5.3 |
| MW-184M1 | N | 11/23/2010 | SW8330 | 7.74 |
| MW-184M1 | FD | 11/23/2010 | SW8330 | 7.21 |
| MW-184M1 | FD | 6/20/2011 | SW8330 | 6.2 |
| MW-184M1 | N | 6/20/2011 | SW8330 | 6.19 |
| MW-184M1 | N | 6/20/2011 | SW8330 | 6.45 J |
| MW-184M1 | FD | 11/17/2011 | SW8330 | 6.92 |
| MW-184M1 | N | 11/17/2011 | SW8330 | 7.41 |
| MW-201M2 | N | 3/13/2002 | SW8330 | 4.1 J |
| MW-201M2 | N | 7/18/2002 | SW8330 | 5.4 |
| MW-201M2 | N | 11/8/2002 | SW8330 | 5.7 |
| MW-201M2 | FD | 11/8/2002 | SW8330 | 5.8 |
| MW-201M2 | N | 6/3/2003 | SW8330 | 4.4 |
| MW-201M2 | FD | 6/3/2003 | SW8330 | 4.4 |
| MW-201M2 | N | 9/2/2003 | SW8330 | 2.7 |
| MW-201M2 | N | 1/20/2004 | SW8330 | 3 |
| MW-201M2 | N | 7/23/2004 | SW8330 | 3.5 |
| MW-201M2 | N | 8/10/2004 | SW8330 | 3.6 |
| MW-201M2 | N | 11/15/2004 | SW8330 | 4.1 |
| MW-201M2 | N | 5/9/2005 | SW8330 | 5.2 |
| MW-201M2 | FD | 9/8/2005 | SW8330 | 4.3 |
| MW-201M2 | N | 9/8/2005 | SW8330 | 4.4 |
| MW-201M2 | N | 12/20/2005 | SW8330 | 3.5 |
| MW-201M2 | N | 4/18/2006 | SW8330 | 4.8 |
| MW-201M2 | N | 10/19/2006 | SW8330 | 3.8 |
| MW-201M2 | N | 5/15/2007 | SW8330 | 2.5 |
| MW-201M2 | N | 10/25/2007 | SW8330 | 2.5 |
| MW-201M2 | N | 6/6/2008 | SW8330 | 1.5 |
| MW-201M2 | N | 12/9/2008 | SW8330 | 1.2 |
| MW-201M2 | N | 6/15/2009 | SW8330 | 1.3 |
| MW-201M2 | N | 12/14/2009 | SW8330 | 1.1 |
| MW-201M2 | N | 5/26/2010 | SW8330 | 1.4 |
| MW-201M2 | N | 12/8/2010 | SW8330 | 0.86 |
| MW-201M2 | N | 5/26/2011 | SW8330 | 0.76 |
| MW-201M2 | N | 12/1/2011 | SW8330 | 1.3 |
| MW-202M1 | N | 3/7/2002 | SW8330 | 0.25 U |
| MW-202M1 | N | 7/29/2002 | SW8330 | 0.25 U |
| MW-202M1 | N | 10/17/2002 | SW8330 | 0.25 U |
| MW-202M1 | N | 6/25/2003 | SW8330 | 0.25 U |
| MW-202M1 | N | 10/8/2003 | SW8330 | 0.25 U |
| MW-202M1 | N | 1/23/2004 | SW8330 | 0.25 U |
| MW-202M1 | N | 7/15/2004 | SW8330 | 0.25 U |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-202M1 | N | 8/27/2004 | SW8330 | 0.25 U |
| MW-202M1 | FD | 5/10/2005 | SW8330 | 0.25 U |
| MW-202M1 | N | 5/10/2005 | SW8330 | 0.25 U |
| MW-202M1 | N | 8/17/2005 | SW8330 | 0.25 U |
| MW-202M1 | N | 4/13/2006 | SW8330 | 0.25 U |
| MW-202M1 | N | 5/16/2007 | SW8330 | 0.25 U |
| MW-202M1 | N | 6/25/2008 | SW8330 | 0.25 U |
| MW-202M1 | N | 6/29/2009 | SW8330 | 0.25 U |
| MW-202M1 | N | 6/22/2010 | SW8330 | 0.2 U |
| MW-202M1 | N | 6/8/2011 | SW8330 | 0.2 U |
| MW-203M2 | N | 9/10/2003 | SW8330 | 0.86 |
| MW-203M2 | N | 2/26/2004 | SW8330 | 2 |
| MW-203M2 | N | 6/21/2004 | SW8330 | 1.7 |
| MW-203M2 | N | 8/27/2004 | SW8330 | 1.7 |
| MW-203M2 | N | 1/14/2005 | SW8330 | 2.3 |
| MW-203M2 | N | 5/10/2005 | SW8330 | 1.6 J |
| MW-203M2 | FD | 8/19/2005 | SW8330 | 1.7 |
| MW-203M2 | N | 8/19/2005 | SW8330 | 1.7 |
| MW-203M2 | N | 2/15/2006 | SW8330 | 0.98 |
| MW-203M2 | N | 4/27/2006 | SW8330 | 1.1 |
| MW-203M2 | N | 10/26/2006 | SW8330 | 1.6 |
| MW-203M2 | N | 5/8/2007 | SW8330 | 2 |
| MW-203M2 | N | 10/18/2007 | SW8330 | 2.9 |
| MW-203M2 | N | 5/19/2008 | SW8330 | 1.8 |
| MW-203M2 | N | 11/26/2008 | SW8330 | 2.5 |
| MW-203M2 | N | 6/4/2009 | SW8330 | 1.8 |
| MW-203M2 | N | 12/15/2009 | SW8330 | 1.4 |
| MW-203M2 | N | 6/14/2010 | SW8330 | 0.97 |
| MW-203M2 | N | 11/19/2010 | SW8330 | 1.87 |
| MW-203M2 | N | 6/21/2011 | SW8330 | 0.61 |
| MW-203M2 | N | 11/21/2011 | SW8330 | 0.21 |
| MW-204M1 | N | 4/10/2002 | SW8330 | 5.6 |
| MW-204M1 | FD | 7/29/2002 | SW8330 | 6 |
| MW-204M1 | N | 7/29/2002 | SW8330 | 6.3 |
| MW-204M1 | N | 10/31/2002 | SW8330 | 8 |
| MW-204M1 | N | 6/26/2003 | SW8330 | 5.1 |
| MW-204M1 | N | 9/2/2003 | SW8330 | 8.5 |
| MW-204M1 | N | 1/21/2004 | SW8330 | 8.7 |
| MW-204M1 | N | 4/27/2004 | SW8330 | 7.7 |
| MW-204M1 | N | 9/7/2004 | SW8330 | 9.8 |
| MW-204M1 | N | 12/22/2004 | SW8330 | 9.9 J |
| MW-204M1 | N | 5/2/2005 | SW8330 | 3.5 |
| MW-204M1 | N | 8/18/2005 | SW8330 | 7.1 |
| MW-204M1 | N | 11/30/2005 | SW8330 | 4.5 |
| MW-204M1 | N | 10/30/2006 | SW8330 | 3.3 |
| MW-204M1 | N | 5/7/2007 | SW8330 | 3.6 |
| MW-204M1 | N | 11/16/2007 | SW8330 | 5 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-204M1 | N | 5/19/2008 | SW8330 | 3.2 |
| MW-204M1 | N | 12/2/2008 | SW8330 | 3.5 |
| MW-204M1 | N | 6/4/2009 | SW8330 | 0.99 |
| MW-204M1 | N | 1/6/2010 | SW8330 | 0.22 |
| MW-204M1 | N | 6/7/2010 | SW8330 | 0.42 |
| MW-204M1 | N | 11/19/2010 | SW8330 | 0.29 |
| MW-204M1 | N | 6/16/2011 | SW8330 | 0.2 U |
| MW-204M1 | N | 11/16/2011 | SW8330 | 0.23 |
| MW-204M2 | N | 4/10/2002 | SW8330 | 1.6 |
| MW-204M2 | N | 7/29/2002 | SW8330 | 6.6 |
| MW-204M2 | N | 10/31/2002 | SW8330 | 6.4 |
| MW-204M2 | N | 6/26/2003 | SW8330 | 0.25 U |
| MW-204M2 | FD | 9/3/2003 | SW8330 | 0.42 |
| MW-204M2 | N | 9/3/2003 | SW8330 | 0.39 |
| MW-204M2 | N | 1/21/2004 | SW8330 | 0.25 U |
| MW-204M2 | FD | 1/21/2004 | SW8330 | 0.25 U |
| MW-204M2 | N | 4/27/2004 | SW8330 | 0.97 |
| MW-204M2 | N | 9/7/2004 | SW8330 | 1.1 |
| MW-204M2 | N | 12/22/2004 | SW8330 | 1.1 J |
| MW-204M2 | FD | 12/22/2004 | SW8330 | 1 J |
| MW-204M2 | N | 5/4/2005 | SW8330 | 0.25 U |
| MW-204M2 | FD | 8/18/2005 | SW8330 | 0.49 |
| MW-204M2 | N | 8/18/2005 | SW8330 | 0.52 |
| MW-204M2 | N | 11/30/2005 | SW8330 | 0.25 U |
| MW-204M2 | FD | 11/30/2005 | SW8330 | 0.25 U |
| MW-204M2 | N | 10/30/2006 | SW8330 | 0.28 |
| MW-204M2 | N | 5/7/2007 | SW8330 | 0.25 U |
| MW-204M2 | N | 11/16/2007 | SW8330 | 1.4 |
| MW-204M2 | N | 5/19/2008 | SW8330 | 2.8 |
| MW-204M2 | N | 12/2/2008 | SW8330 | 1.4 |
| MW-204M2 | N | 6/4/2009 | SW8330 | 0.31 |
| MW-204M2 | N | 1/6/2010 | SW8330 | 0.2 U |
| MW-204M2 | N | 6/7/2010 | SW8330 | 0.2 U |
| MW-204M2 | N | 11/19/2010 | SW8330 | 0.2 |
| MW-204M2 | N | 6/16/2011 | SW8330 | 0.4 |
| MW-204M2 | N | 11/16/2011 | SW8330 | 0.21 |
| MW-207M1 | N | 4/16/2002 | SW8330 | 18 |
| MW-207M1 | N | 7/26/2002 | SW8330 | 18 |
| MW-207M1 | FD | 7/26/2002 | SW8330 | 18 |
| MW-207M1 | N | 10/18/2002 | SW8330 | 18 |
| MW-207M1 | N | 6/5/2003 | SW8330 | 12 |
| MW-207M1 | N | 10/15/2003 | SW8330 | 10 |
| MW-207M1 | N | 2/12/2004 | SW8330 | 12 |
| MW-207M1 | N | 5/3/2004 | SW8330 | 13 |
| MW-207M1 | N | 8/13/2004 | SW8330 | 11 |
| MW-207M1 | N | 12/14/2004 | SW8330 | 14 |
| MW-207M1 | N | 5/9/2005 | SW8330 | 15 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-207M1 | N | 8/16/2005 | SW8330 | 8.6 |
| MW-207M1 | N | 12/5/2005 | SW8330 | 14 |
| MW-207M1 | N | 4/17/2006 | SW8330 | 9 |
| MW-207M1 | N | 10/16/2006 | SW8330 | 10 |
| MW-207M1 | N | 5/24/2007 | SW8330 | 0 R |
| MW-207M1 | N | 11/9/2007 | SW8330 | 13 |
| MW-207M1 | N | 6/11/2008 | SW8330 | 9 |
| MW-207M1 | N | 12/9/2008 | SW8330 | 8.8 |
| MW-207M1 | FD | 6/23/2009 | SW8330 | 9.4 |
| MW-207M1 | N | 6/23/2009 | SW8330 | 8.8 |
| MW-207M1 | FD | 12/8/2009 | SW8330 | 7.3 |
| MW-207M1 | N | 12/8/2009 | SW8330 | 7.5 |
| MW-207M1 | FD | 5/26/2010 | SW8330 | 5 |
| MW-207M1 | N | 5/26/2010 | SW8330 | 4.9 |
| MW-207M1 | N | 11/16/2010 | SW8330 | 5.66 |
| MW-207M1 | N | 6/13/2011 | SW8330 | 5.69 |
| MW-207M1 | FD | 6/13/2011 | SW8330 | 5.63 |
| MW-207M1 | FD | 11/21/2011 | SW8330 | 5.39 |
| MW-207M1 | N | 11/21/2011 | SW8330 | 5.32 |
| MW-208M1 | N | 4/16/2002 | SW8330 | 0.25 U |
| MW-208M1 | N | 7/26/2002 | SW8330 | 0.25 U |
| MW-208M1 | N | 10/18/2002 | SW8330 | 0.25 U |
| MW-208M1 | N | 5/22/2003 | SW8330 | 0.25 U |
| MW-208M1 | N | 10/15/2003 | SW8330 | 0.25 U |
| MW-208M1 | N | 2/13/2004 | SW8330 | 0.25 U |
| MW-208M1 | N | 8/13/2004 | SW8330 | 0.25 U |
| MW-208M1 | N | 8/3/2005 | SW8330 | 0.25 U |
| MW-208M1 | N | 4/26/2006 | SW8330 | 0.25 U |
| MW-208M1 | N | 10/26/2006 | SW8330 | 0.25 U |
| MW-208M1 | FD | 10/26/2006 | SW8330 | 0.25 U |
| MW-208M1 | N | 5/8/2007 | SW8330 | 0.25 U |
| MW-208M1 | N | 10/18/2007 | SW8330 | 0.25 U |
| MW-208M1 | N | 5/30/2008 | SW8330 | 0.25 U |
| MW-208M1 | N | 12/11/2008 | SW8330 | 0.25 U |
| MW-208M1 | N | 6/10/2009 | SW8330 | 0.25 U |
| MW-208M1 | N | 12/14/2009 | SW8330 | 0.25 U |
| MW-208M1 | N | 6/14/2010 | SW8330 | 0.2 U |
| MW-208M1 | N | 11/5/2010 | SW8330 | 0.2 UJ |
| MW-208M1 | N | 6/1/2011 | SW8330 | 0.2 U |
| MW-208M1 | N | 11/21/2011 | SW8330 | 0.2 U |
| MW-209M1 | N | 4/30/2002 | SW8330 | 2.4 |
| MW-209M1 | N | 7/26/2002 | SW8330 | 2.5 |
| MW-209M1 | N | 10/17/2002 | SW8330 | 2.9 |
| MW-209M1 | N | 6/12/2003 | SW8330 | 3.8 |
| MW-209M1 | N | 10/29/2003 | SW8330 | 4.5 |
| MW-209M1 | N | 2/13/2004 | SW8330 | 5.1 |
| MW-209M1 | N | 5/3/2004 | SW8330 | 5.8 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-209M1 | N | 9/29/2004 | SW8330 | 6.9 |
| MW-209M1 | N | 12/22/2004 | SW8330 | 6.3 J |
| MW-209M1 | N | 5/9/2005 | SW8330 | 6.6 |
| MW-209M1 | N | 11/8/2005 | SW8330 | 6.1 |
| MW-209M1 | N | 2/14/2006 | SW8330 | 5.3 |
| MW-209M1 | N | 4/17/2006 | SW8330 | 5 |
| MW-209M1 | N | 10/16/2006 | SW8330 | 5.5 |
| MW-209M1 | N | 5/15/2007 | SW8330 | 5.7 |
| MW-209M1 | N | 10/25/2007 | SW8330 | 6.1 |
| MW-209M1 | N | 6/3/2008 | SW8330 | 6.9 |
| MW-209M1 | N | 12/8/2008 | SW8330 | 7.1 |
| MW-209M1 | N | 6/18/2009 | SW8330 | 7.9 |
| MW-209M1 | FD | 6/18/2009 | SW8330 | 7.9 |
| MW-209M1 | N | 12/14/2009 | SW8330 | 7.8 |
| MW-209M1 | N | 5/26/2010 | SW8330 | 6.6 |
| MW-209M1 | FD | 5/26/2010 | SW8330 | 6.4 |
| MW-209M1 | N | 11/17/2010 | SW8330 | 6.39 |
| MW-209M1 | FD | 11/17/2010 | SW8330 | 6.1 |
| MW-209M1 | N | 6/13/2011 | SW8330 | 6.51 |
| MW-209M1 | FD | 6/13/2011 | SW8330 | 6.68 |
| MW-209M1 | N | 12/1/2011 | SW8330 | 7.42 |
| MW-209M1 | FD | 12/1/2011 | SW8330 | 7.62 |
| MW-212M1 | N | 6/7/2002 | SW8330 | 0.25 U |
| MW-212M1 | N | 9/18/2002 | SW8330 | 0.25 U |
| MW-212M1 | N | 11/12/2002 | SW8330 | 0.25 U |
| MW-212M1 | N | 6/10/2003 | SW8330 | 0.25 U |
| MW-212M1 | FD | 10/10/2003 | SW8330 | 0.25 U |
| MW-212M1 | N | 10/10/2003 | SW8330 | 0.25 U |
| MW-212M1 | N | 2/24/2004 | SW8330 | 0.25 U |
| MW-212M1 | FD | 2/24/2004 | SW8330 | 0.25 U |
| MW-212M1 | N | 7/14/2004 | SW8330 | 0.25 U |
| MW-212M1 | N | 9/1/2004 | SW8330 | 0.25 U |
| MW-212M1 | N | 3/15/2005 | SW8330 | 0.25 U |
| MW-212M1 | FD | 5/12/2005 | SW8330 | 0.25 U |
| MW-212M1 | N | 5/12/2005 | SW8330 | 0.25 U |
| MW-212M1 | N | 8/15/2005 | SW8330 | 0.25 U |
| MW-212M1 | N | 12/8/2005 | SW8330 | 0.25 U |
| MW-212M1 | N | 4/18/2006 | SW8330 | 0.25 U |
| MW-212M1 | N | 10/26/2006 | SW8330 | 0.25 U |
| MW-212M1 | N | 5/24/2007 | SW8330 | 0 R |
| MW-212M1 | N | 11/8/2007 | SW8330 | 0.25 U |
| MW-212M1 | FD | 11/8/2007 | SW8330 | 0.25 U |
| MW-212M1 | N | 6/9/2008 | SW8330 | 0.25 U |
| MW-212M1 | N | 12/9/2008 | SW8330 | 0.25 U |
| MW-212M1 | N | 6/23/2009 | SW8330 | 0.25 U |
| MW-212M1 | N | 12/10/2009 | SW8330 | 0.25 U |
| MW-212M1 | N | 6/23/2010 | SW8330 | 0.2 U |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-212M1 | N | 12/8/2010 | SW8330 | 0.2 U |
| MW-212M1 | N | 6/8/2011 | SW8330 | 0.2 U |
| MW-212M1 | N | 12/5/2011 | SW8330 | 0.2 U |
| MW-223M1 | N | 7/30/2002 | SW8330 | 0.25 U |
| MW-223M1 | N | 11/4/2002 | SW8330 | 0.25 U |
| MW-223M1 | N | 2/27/2003 | SW8330 | 0.25 U |
| MW-223M1 | N | 1/30/2004 | SW8330 | 0.25 U |
| MW-223M1 | N | 3/12/2004 | SW8330 | 0.25 U |
| MW-223M1 | N | 5/17/2004 | SW8330 | 0.25 U |
| MW-223M1 | N | 8/10/2004 | SW8330 | 0.25 U |
| MW-223M1 | N | 3/25/2005 | SW8330 | 0.3 |
| MW-223M1 | N | 5/10/2005 | SW8330 | 0.92 |
| MW-223M1 | N | 10/24/2005 | SW8330 | 1 |
| MW-223M1 | N | 1/11/2006 | SW8330 | 0.93 J |
| MW-223M1 | N | 4/18/2006 | SW8330 | 0.66 |
| MW-223M1 | N | 10/18/2006 | SW8330 | 0.55 |
| MW-223M1 | N | 5/14/2007 | SW8330 | 0.25 U |
| MW-223M1 | N | 12/5/2007 | SW8330 | 0.25 U |
| MW-223M1 | N | 6/10/2008 | SW8330 | 0.25 U |
| MW-223M1 | N | 12/8/2008 | SW8330 | 0.25 U |
| MW-223M1 | N | 6/18/2009 | SW8330 | 0.25 U |
| MW-223M1 | N | 12/9/2009 | SW8330 | 0.25 U |
| MW-223M1 | N | 6/29/2010 | SW8330 | 0.31 |
| MW-223M1 | N | 12/9/2010 | SW8330 | 0.2 U |
| MW-223M1 | N | 6/6/2011 | SW8330 | 0.2 U |
| MW-223M1 | N | 11/21/2011 | SW8330 | 0.2 U |
| MW-223M2 | N | 7/30/2002 | SW8330 | 1.8 J |
| MW-223M2 | N | 11/5/2002 | SW8330 | 2.5 |
| MW-223M2 | N | 2/28/2003 | SW8330 | 2.8 J |
| MW-223M2 | N | 1/30/2004 | SW8330 | 2.1 |
| MW-223M2 | FD | 3/12/2004 | SW8330 | 2 |
| MW-223M2 | N | 3/12/2004 | SW8330 | 2 |
| MW-223M2 | N | 5/17/2004 | SW8330 | 1.7 |
| MW-223M2 | N | 8/10/2004 | SW8330 | 1.4 |
| MW-223M2 | N | 3/29/2005 | SW8330 | 2.3 |
| MW-223M2 | N | 5/10/2005 | SW8330 | 1.9 |
| MW-223M2 | FD | 5/10/2005 | SW8330 | 1.9 |
| MW-223M2 | N | 10/24/2005 | SW8330 | 3.8 |
| MW-223M2 | N | 1/11/2006 | SW8330 | 3.3 |
| MW-223M2 | FD | 1/11/2006 | SW8330 | 3.2 |
| MW-223M2 | N | 10/18/2006 | SW8330 | 4 |
| MW-223M2 | N | 5/14/2007 | SW8330 | 3.2 |
| MW-223M2 | N | 12/5/2007 | SW8330 | 2.8 |
| MW-223M2 | N | 6/10/2008 | SW8330 | 1.5 |
| MW-223M2 | N | 12/8/2008 | SW8330 | 1.5 |
| MW-223M2 | N | 6/18/2009 | SW8330 | 2.6 |
| MW-223M2 | N | 12/9/2009 | SW8330 | 2.3 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-223M2 | N | 6/29/2010 | SW8330 | 2.2 |
| MW-223M2 | N | 12/9/2010 | SW8330 | 1.62 |
| MW-223M2 | N | 6/6/2011 | SW8330 | 2.07 |
| MW-223M2 | N | 11/21/2011 | SW8330 | 2.18 |
| MW-235M1 | N | 10/7/2002 | SW8330 | 9.1 |
| MW-235M1 | FD | 10/7/2002 | SW8330 | 9.2 |
| MW-235M1 | N | 3/4/2003 | SW8330 | 11 J |
| MW-235M1 | N | 6/27/2003 | SW8330 | 9.5 |
| MW-235M1 | N | 4/23/2004 | SW8330 | 0 R |
| MW-235M1 | N | 4/23/2004 | SW8330 | 27 |
| MW-235M1 | N | 5/21/2004 | SW8330 | 30 |
| MW-235M1 | N | 5/21/2004 | SW8330 | 0 R |
| MW-235M1 | N | 10/18/2004 | SW8330 | 0 R |
| MW-235M1 | N | 10/18/2004 | SW8330 | 40 |
| MW-235M1 | N | 12/21/2004 | SW8330 | 0 R |
| MW-235M1 | N | 12/21/2004 | SW8330 | 34 |
| MW-235M1 | N | 5/4/2005 | SW8330 | 0 R |
| MW-235M1 | N | 5/4/2005 | SW8330 | 38 |
| MW-235M1 | N | 9/29/2005 | SW8330 | 44 |
| MW-235M1 | N | 1/23/2006 | SW8330 | 0 R |
| MW-235M1 | N | 1/23/2006 | SW8330 | 42 |
| MW-235M1 | N | 5/1/2006 | SW8330 | 46 R |
| MW-235M1 | N | 5/1/2006 | SW8330 | 45 |
| MW-235M1 | N | 10/25/2006 | SW8330 | 31 |
| MW-235M1 | N | 10/25/2006 | SW8330 | 0 R |
| MW-235M1 | N | 5/11/2007 | SW8330 | 37 |
| MW-235M1 | FD | 5/11/2007 | SW8330 | 36 |
| MW-235M1 | N | 11/26/2007 | SW8330 | 23 |
| MW-235M1 | N | 5/21/2008 | SW8330 | 22 |
| MW-235M1 | FD | 5/21/2008 | SW8330 | 22 |
| MW-235M1 | N | 11/12/2008 | SW8330 | 16 |
| MW-235M1 | FD | 11/12/2008 | SW8330 | 17 |
| MW-235M1 | N | 6/16/2009 | SW8330 | 8.1 |
| MW-235M1 | FD | 6/16/2009 | SW8330 | 8.1 |
| MW-235M1 | FD | 12/28/2009 | SW8330 | 3.1 |
| MW-235M1 | N | 12/28/2009 | SW8330 | 3.2 |
| MW-235M1 | N | 6/1/2010 | SW8330 | 2.2 |
| MW-235M1 | N | 12/7/2010 | SW8330 | 2.46 |
| MW-235M1 | N | 5/31/2011 | SW8330 | 1.55 |
| MW-235M1 | N | 12/2/2011 | SW8330 | 0.78 |
| MW-23M1 | N | 11/7/1997 | SW8330 | 2.3 J |
| MW-23M1 | N | 3/18/1999 | SW8330 | 4.7 |
| MW-23M1 | N | 3/18/1999 | SW8330 | 4.4 |
| MW-23M1 | N | 9/13/1999 | SW8330 | 6.1 |
| MW-23M1 | N | 5/12/2000 | SW8330 | 6.6 J |
| MW-23M1 | N | 8/8/2000 | SW8330 | 6.3 |
| MW-23M1 | FD | 12/4/2000 | SW8330 | 6.2 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-23M1 | N | 12/4/2000 | SW8330 | 6 |
| MW-23M1 | N | 4/27/2001 | SW8330 | 5.9 |
| MW-23M1 | N | 7/30/2001 | SW8330 | 5.3 |
| MW-23M1 | N | 12/6/2001 | SW8330 | 5.3 |
| MW-23M1 | FD | 5/9/2002 | SW8330 | 5.5 |
| MW-23M1 | N | 5/9/2002 | SW8330 | 5.5 |
| MW-23M1 | N | 8/15/2002 | SW8330 | 5 |
| MW-23M1 | N | 1/30/2003 | SW8330 | 4.2 |
| MW-23M1 | N | 4/7/2003 | SW8330 | 4 |
| MW-23M1 | N | 10/7/2003 | SW8330 | 4.1 |
| MW-23M1 | N | 2/12/2004 | SW8330 | 4.5 |
| MW-23M1 | N | 7/9/2004 | SW8330 | 4.2 |
| MW-23M1 | N | 8/30/2004 | SW8330 | 3.6 |
| MW-23M1 | N | 1/4/2005 | SW8330 | 3.4 J |
| MW-23M1 | N | 5/11/2005 | SW8330 | 3.2 |
| MW-23M1 | FD | 5/11/2005 | SW8330 | 3.1 |
| MW-23M1 | N | 8/1/2005 | SW8330 | 2.3 |
| MW-23M1 | N | 12/6/2005 | SW8330 | 2.8 |
| MW-23M1 | FD | 12/6/2005 | SW8330 | 2.6 |
| MW-23M1 | N | 4/24/2006 | SW8330 | 2.7 |
| MW-23M1 | N | 10/31/2006 | SW8330 | 2.8 |
| MW-23M1 | N | 5/15/2007 | SW8330 | 2.7 |
| MW-23M1 | N | 10/25/2007 | SW8330 | 2.3 |
| MW-23M1 | N | 6/3/2008 | SW8330 | 2.1 |
| MW-23M1 | N | 12/9/2008 | SW8330 | 1.5 |
| MW-23M1 | N | 6/15/2009 | SW8330 | 1.2 |
| MW-23M1 | N | 12/8/2009 | SW8330 | 1.2 |
| MW-23M1 | N | 6/14/2010 | SW8330 | 1.2 |
| MW-23M1 | N | 12/9/2010 | SW8330 | 3.03 |
| MW-23M1 | FD | 6/13/2011 | SW8330 | 3.21 |
| MW-23M1 | N | 6/13/2011 | SW8330 | 3.28 |
| MW-23M1 | N | 12/5/2011 | SW8330 | 3.4 |
| MW-249M2 | N | 1/21/2003 | SW8330 | 0.56 |
| MW-249M2 | N | 5/2/2003 | SW8330 | 0.67 |
| MW-249M2 | N | 8/22/2003 | SW8330 | 1 |
| MW-249M2 | N | 6/7/2004 | SW8330 | 1.2 |
| MW-249M2 | N | 9/23/2004 | SW8330 | 1.6 |
| MW-249M2 | N | 3/23/2005 | SW8330 | 0.54 |
| MW-249M2 | N | 6/2/2005 | SW8330 | 0.44 J |
| MW-249M2 | N | 11/8/2005 | SW8330 | 0.44 J |
| MW-249M2 | N | 2/7/2006 | SW8330 | 0.37 J |
| MW-249M2 | N | 4/25/2006 | SW8330 | 0.25 U |
| MW-249M2 | N | 10/19/2006 | SW8330 | 0.58 |
| MW-249M2 | N | 6/13/2007 | SW8330 | 0.25 U |
| MW-249M2 | N | 11/13/2007 | SW8330 | 0.61 |
| MW-249M2 | N | 6/10/2008 | SW8330 | 0.34 |
| MW-249M2 | N | 12/10/2008 | SW8330 | 0.37 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-249M2 | N | 6/23/2009 | SW8330 | 0.41 |
| MW-249M2 | N | 12/17/2009 | SW8330 | 0.36 |
| MW-249M2 | N | 6/24/2010 | SW8330 | 0.31 |
| MW-249M2 | N | 12/9/2010 | SW8330 | 0.2 U |
| MW-249M2 | N | 6/6/2011 | SW8330 | 0.59 |
| MW-249M2 | N | 11/22/2011 | SW8330 | 0.44 |
| MW-25 | N | 9/22/1997 | SW8330 | 0.25 U |
| MW-25 | N | 10/16/1997 | SW8330 | 2 |
| MW-25 | N | 3/17/1999 | SW8330 | 4.1 |
| MW-25 | N | 9/14/1999 | SW8330 | 0.65 |
| MW-25 | N | 5/31/2000 | SW8330 | 1.4 |
| MW-25 | FD | 5/31/2000 | SW8330 | 1.3 J |
| MW-25 | N | 8/8/2000 | SW8330 | 0.45 J |
| MW-25 | N | 12/4/2000 | SW8330 | 1 |
| MW-25 | N | 5/1/2001 | SW8330 | 0.99 |
| MW-25 | N | 12/1/2001 | SW8330 | 0.98 |
| MW-25 | N | 10/23/2003 | SW8330 | 0.25 U |
| MW-25 | N | 1/23/2004 | SW8330 | 0.88 |
| MW-25 | N | 6/4/2004 | SW8330 | 0.47 J |
| MW-25 | FD | 6/4/2004 | SW8330 | 0.45 J |
| MW-25 | N | 4/25/2005 | SW8330 | 0.4 |
| MW-25 | N | 11/23/2005 | SW8330 | 0.54 J |
| MW-25 | N | 1/19/2006 | SW8330 | 0.57 |
| MW-25 | N | 4/26/2006 | SW8330 | 0.29 |
| MW-25 | N | 11/27/2006 | SW8330 | 1.9 |
| MW-25 | N | 5/11/2007 | SW8330 | 1.2 |
| MW-25 | N | 11/28/2007 | SW8330 | 2 |
| MW-25 | N | 5/22/2008 | SW8330 | 0.85 |
| MW-25 | N | 11/17/2008 | SW8330 | 0.59 |
| MW-25 | N | 6/26/2009 | SW8330 | 0.25 U |
| MW-25 | N | 12/30/2009 | SW8330 | 0.46 |
| MW-25 | N | 6/30/2010 | SW8330 | 0.8 |
| MW-25 | N | 11/22/2010 | SW8330 | 1.53 |
| MW-25 | N | 6/3/2011 | SW8330 | 0.35 |
| MW-25 | N | 11/30/2011 | SW8330 | 1.6 |
| MW-27 | N | 10/7/1997 | SW8330 | 0.3 J |
| MW-27 | N | 11/21/1997 | SW8330 | 0.25 U |
| MW-27 | N | 3/18/1999 | SW8330 | 0.39 J |
| MW-27 | N | 9/17/1999 | SW8330 | 0.25 U |
| MW-27 | N | 5/30/2000 | SW8330 | 1.2 |
| MW-27 | N | 8/9/2000 | SW8330 | 1.3 |
| MW-27 | N | 12/28/2000 | SW8330 | 0.5 J |
| MW-27 | N | 5/1/2001 | SW8330 | 0.35 |
| MW-27 | N | 11/30/2001 | SW8330 | 0.3 |
| MW-27 | FD | 11/25/2003 | SW8330 | 0.25 U |
| MW-27 | N | 11/25/2003 | SW8330 | 0.25 U |
| MW-27 | N | 2/27/2004 | SW8330 | 0.25 U |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-27 | N | 7/20/2004 | SW8330 | 0.25 U |
| MW-27 | N | 9/24/2004 | SW8330 | 0.25 U |
| MW-27 | FD | 9/24/2004 | SW8330 | 0.25 U |
| MW-27 | N | 5/4/2005 | SW8330 | 0.25 U |
| MW-27 | N | 10/5/2005 | SW8330 | 0.25 U |
| MW-27 | N | 1/25/2006 | SW8330 | 0.25 U |
| MW-27 | N | 4/20/2006 | SW8330 | 0.25 U |
| MW-27 | N | 5/31/2007 | SW8330 | 0.25 U |
| MW-27 | N | 6/13/2008 | SW8330 | 0.25 U |
| MW-27 | N | 6/17/2009 | SW8330 | 0.25 U |
| MW-27 | N | 7/6/2010 | SW8330 | 0.2 U |
| MW-27 | N | 6/10/2011 | SW8330 | 0.2 U |
| MW-37M2 | N | 9/29/1999 | SW8330 | 2.9 |
| MW-37M2 | N | 12/29/1999 | SW8330 | 3.6 |
| MW-37M2 | N | 3/27/2000 | SW8330 | 3.1 |
| MW-37M2 | N | 8/31/2000 | SW8330 | 2.8 J |
| MW-37M2 | FD | 11/27/2000 | SW8330 | 2.4 |
| MW-37M2 | N | 11/27/2000 | SW8330 | 2.4 |
| MW-37M2 | N | 4/30/2001 | SW8330 | 0.88 |
| MW-37M2 | N | 8/15/2001 | SW8330 | 0.72 |
| MW-37M2 | FD | 8/15/2001 | SW8330 | 0.69 |
| MW-37M2 | N | 12/1/2001 | SW8330 | 1.4 |
| MW-37M2 | N | 6/11/2002 | SW8330 | 4 |
| MW-37M2 | FD | 6/11/2002 | SW8330 | 4 |
| MW-37M2 | N | 8/13/2002 | SW8330 | 4.6 J |
| MW-37M2 | N | 1/31/2003 | SW8330 | 3.4 |
| MW-37M2 | N | 4/10/2003 | SW8330 | 3.1 |
| MW-37M2 | N | 10/1/2003 | SW8330 | 2.6 |
| MW-37M2 | N | 3/1/2004 | SW8330 | 2.1 |
| MW-37M2 | N | 7/15/2004 | SW8330 | 1 |
| MW-37M2 | N | 9/24/2004 | SW8330 | 1.6 |
| MW-37M2 | N | 12/21/2004 | SW8330 | 2.3 J |
| MW-37M2 | N | 5/2/2005 | SW8330 | 2.1 |
| MW-37M2 | N | 10/28/2005 | SW8330 | 0.58 J |
| MW-37M2 | N | 1/17/2006 | SW8330 | 0.45 |
| MW-37M2 | N | 11/16/2006 | SW8330 | 2.5 |
| MW-37M2 | N | 5/23/2007 | SW8330 | 1.2 |
| MW-37M2 | N | 6/13/2008 | SW8330 | 0.59 |
| MW-37M2 | N | 6/17/2009 | SW8330 | 0.8 |
| MW-37M2 | N | 7/6/2010 | SW8330 | 0.2 U |
| MW-37M2 | N | 6/17/2011 | SW8330 | 0.2 U |
| MW-38M3 | N | 5/6/1999 | SW8330 | 2.5 |
| MW-38M3 | N | 8/18/1999 | SW8330 | 2.6 |
| MW-38M3 | N | 11/10/1999 | SW8330 | 3 |
| MW-38M3 | N | 5/16/2000 | SW8330 | 2.9 J |
| MW-38M3 | N | 8/11/2000 | SW8330 | 2.6 |
| MW-38M3 | N | 11/20/2000 | SW8330 | 2.4 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-38M3 | N | 4/30/2001 | SW8330 | 2.3 J |
| MW-38M3 | N | 8/14/2001 | SW8330 | 2 |
| MW-38M3 | N | 11/29/2001 | SW8330 | 2.1 J |
| MW-38M3 | FD | 11/29/2001 | SW8330 | 2 J |
| MW-38M3 | N | 5/13/2002 | SW8330 | 1.8 |
| MW-38M3 | N | 9/26/2002 | SW8330 | 1.6 |
| MW-38M3 | N | 1/31/2003 | SW8330 | 1.4 J |
| MW-38M3 | N | 4/16/2003 | SW8330 | 1.4 |
| MW-38M3 | N | 11/19/2003 | SW8330 | 1.1 |
| MW-38M3 | N | 2/26/2004 | SW8330 | 1.1 |
| MW-38M3 | N | 4/26/2004 | SW8330 | 1.2 |
| MW-38M3 | N | 11/4/2004 | SW8330 | 1.4 J |
| MW-38M3 | N | 2/18/2005 | SW8330 | 1.3 J |
| MW-38M3 | N | 5/13/2005 | SW8330 | 1.4 |
| MW-38M3 | N | 10/25/2005 | SW8330 | 1.4 |
| MW-38M3 | N | 1/17/2006 | SW8330 | 1.5 |
| MW-38M3 | FD | 1/17/2006 | SW8330 | 1.5 |
| MW-38M3 | N | 11/27/2006 | SW8330 | 1.5 |
| MW-38M3 | N | 5/11/2007 | SW8330 | 1.5 |
| MW-38M3 | FD | 5/11/2007 | SW8330 | 1.5 |
| MW-38M3 | N | 11/29/2007 | SW8330 | 1.4 |
| MW-38M3 | N | 5/20/2008 | SW8330 | 1.3 |
| MW-38M3 | N | 11/18/2008 | SW8330 | 1.1 |
| MW-38M3 | N | 6/9/2009 | SW8330 | 1.3 J |
| MW-38M3 | N | 12/29/2009 | SW8330 | 1.3 |
| MW-38M3 | N | 6/9/2010 | SW8330 | 1.1 |
| MW-38M3 | N | 11/23/2010 | SW8330 | 0.9 |
| MW-38M3 | N | 6/17/2011 | SW8330 | 0.8 |
| MW-38M3 | N | 11/17/2011 | SW8330 | 0.68 |
| MW-38M4 | N | 5/6/1999 | SW8330 | 1.2 |
| MW-38M4 | N | 8/18/1999 | SW8330 | 0.68 |
| MW-38M4 | N | 11/11/1999 | SW8330 | 1.1 |
| MW-38M4 | N | 5/16/2000 | SW8330 | 0.62 J |
| MW-38M4 | N | 8/14/2000 | SW8330 | 0.25 U |
| MW-38M4 | N | 11/20/2000 | SW8330 | 0.25 U |
| MW-38M4 | FD | 11/20/2000 | SW8330 | 0.25 U |
| MW-38M4 | N | 5/1/2001 | SW8330 | 0.25 U |
| MW-38M4 | N | 8/14/2001 | SW8330 | 0.25 U |
| MW-38M4 | N | 11/29/2001 | SW8330 | 0.49 J |
| MW-38M4 | FD | 5/13/2002 | SW8330 | 1.6 |
| MW-38M4 | N | 5/13/2002 | SW8330 | 1.6 |
| MW-38M4 | N | 9/26/2002 | SW8330 | 0.68 |
| MW-38M4 | N | 1/31/2003 | SW8330 | 1.2 |
| MW-38M4 | N | 4/16/2003 | SW8330 | 1.2 |
| MW-38M4 | N | 11/20/2003 | SW8330 | 0.34 |
| MW-38M4 | N | 2/26/2004 | SW8330 | 1 J |
| MW-38M4 | N | 4/26/2004 | SW8330 | 1.4 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-38M4 | N | 11/5/2004 | SW8330 | 2.1 J |
| MW-38M4 | N | 2/18/2005 | SW8330 | 2.4 J |
| MW-38M4 | N | 5/13/2005 | SW8330 | 2.1 J |
| MW-38M4 | N | 10/25/2005 | SW8330 | 0.95 J |
| MW-38M4 | N | 1/17/2006 | SW8330 | 1.2 |
| MW-38M4 | N | 4/26/2006 | SW8330 | 1.2 |
| MW-38M4 | N | 11/27/2006 | SW8330 | 0.76 |
| MW-38M4 | N | 5/11/2007 | SW8330 | 2.1 |
| MW-38M4 | N | 11/29/2007 | SW8330 | 1.7 |
| MW-38M4 | N | 5/20/2008 | SW8330 | 1.4 |
| MW-38M4 | N | 11/18/2008 | SW8330 | 1.5 |
| MW-38M4 | N | 6/9/2009 | SW8330 | 0.25 UJ |
| MW-38M4 | N | 12/29/2009 | SW8330 | 0.32 |
| MW-38M4 | N | 6/9/2010 | SW8330 | 0.2 U |
| MW-38M4 | N | 11/23/2010 | SW8330 | 0.57 |
| MW-38M4 | N | 6/17/2011 | SW8330 | 0.71 |
| MW-38M4 | N | 11/17/2011 | SW8330 | 1.46 |
| MW-40S | N | 9/21/1999 | SW8330 | 0.25 U |
| MW-40S | N | 12/29/1999 | SW8330 | 0.25 U |
| MW-40S | N | 3/28/2000 | SW8330 | 0.25 U |
| MW-40S | N | 9/1/2000 | SW8330 | 0.25 U |
| MW-40S | N | 11/27/2000 | SW8330 | 0.25 U |
| MW-40S | N | 6/2/2001 | SW8330 | 0.25 U |
| MW-40S | N | 8/20/2001 | SW8330 | 0.51 |
| MW-40S | N | 11/30/2001 | SW8330 | 0.25 U |
| MW-40S | N | 10/9/2003 | SW8330 | 0.74 J |
| MW-40S | N | 2/9/2004 | SW8330 | 0.25 U |
| MW-40S | N | 4/29/2004 | SW8330 | 0.25 U |
| MW-40S | N | 10/21/2004 | SW8330 | 0.25 U |
| MW-40S | N | 4/26/2005 | SW8330 | 0.25 U |
| MW-40S | N | 11/3/2005 | SW8330 | 0.25 U |
| MW-40S | N | 1/19/2006 | SW8330 | 0.25 U |
| MW-40S | N | 5/1/2006 | SW8330 | 0.25 U |
| MW-40S | N | 6/1/2007 | SW8330 | 0.25 U |
| MW-40S | N | 6/13/2008 | SW8330 | 0.25 U |
| MW-40S | N | 6/17/2009 | SW8330 | 0.25 U |
| MW-40S | N | 6/2/2010 | SW8330 | 0.2 U |
| MW-40S | N | 6/10/2011 | SW8330 | 0.2 U |
| MW-42M2 | N | 5/24/1999 | SW8330 | 0.25 U |
| MW-42M2 | N | 8/23/1999 | SW8330 | 0.25 U |
| MW-42M2 | N | 11/19/1999 | SW8330 | 0.25 U |
| MW-42M2 | FD | 5/19/2000 | SW8330 | 0.25 U |
| MW-42M2 | N | 5/19/2000 | SW8330 | 0.25 U |
| MW-42M2 | N | 8/14/2000 | SW8330 | 0.25 U |
| MW-42M2 | N | 12/20/2000 | SW8330 | 0.25 U |
| MW-42M2 | N | 5/10/2001 | SW8330 | 0.25 U |
| MW-42M2 | FD | 5/10/2001 | SW8330 | 0.25 U |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-42M2 | N | 8/6/2001 | SW8330 | 0.25 U |
| MW-42M2 | N | 12/17/2001 | SW8330 | 0.25 U |
| MW-42M2 | N | 5/1/2002 | SW8330 | 0.25 U |
| MW-42M2 | N | 10/1/2002 | SW8330 | 0.25 U |
| MW-42M2 | N | 11/21/2002 | SW8330 | 0.25 U |
| MW-42M2 | N | 5/7/2003 | SW8330 | 0.25 U |
| MW-42M2 | N | 10/10/2003 | SW8330 | 0.25 U |
| MW-42M2 | N | 2/11/2004 | SW8330 | 0.25 U |
| MW-42M2 | FD | 5/3/2004 | SW8330 | 0.25 U |
| MW-42M2 | N | 5/3/2004 | SW8330 | 0.25 U |
| MW-42M2 | N | 8/25/2004 | SW8330 | 0.25 U |
| MW-42M2 | FD | 2/23/2005 | SW8330 | 0.25 U |
| MW-42M2 | N | 2/23/2005 | SW8330 | 0.25 U |
| MW-42M2 | N | 5/10/2005 | SW8330 | 0.25 U |
| MW-42M2 | N | 9/14/2005 | SW8330 | 0.25 U |
| MW-42M2 | N | 12/16/2005 | SW8330 | 0.25 U |
| MW-42M2 | N | 4/27/2006 | SW8330 | 0.25 U |
| MW-42M2 | FD | 4/27/2006 | SW8330 | 0.25 U |
| MW-42M2 | N | 11/2/2006 | SW8330 | 0.25 U |
| MW-42M2 | N | 5/29/2007 | SW8330 | 0.25 U |
| MW-42M2 | N | 11/13/2007 | SW8330 | 0.25 U |
| MW-42M2 | N | 6/10/2008 | SW8330 | 0.25 U |
| MW-42M2 | N | 12/10/2008 | SW8330 | 0.25 U |
| MW-42M2 | N | 6/22/2009 | SW8330 | 0.25 U |
| MW-42M2 | N | 12/10/2009 | SW8330 | 0.25 U |
| MW-42M2 | N | 6/23/2010 | SW8330 | 0.2 U |
| MW-42M2 | N | 12/8/2010 | SW8330 | 0.2 U |
| MW-42M2 | N | 6/6/2011 | SW8330 | 0.2 U |
| MW-42M2 | N | 11/22/2011 | SW8330 | 0.2 U |
| MW-42M3 | N | 5/25/1999 | SW8330 | 0.25 U |
| MW-42M3 | N | 8/23/1999 | SW8330 | 0.25 U |
| MW-42M3 | N | 11/12/1999 | SW8330 | 0.25 U |
| MW-42M3 | N | 5/19/2000 | SW8330 | 0.25 U |
| MW-42M3 | N | 8/14/2000 | SW8330 | 0.25 U |
| MW-42M3 | N | 12/20/2000 | SW8330 | 0.25 U |
| MW-42M3 | N | 5/15/2001 | SW8330 | 0.25 U |
| MW-42M3 | N | 8/7/2001 | SW8330 | 0.25 U |
| MW-42M3 | FD | 12/17/2001 | SW8330 | 0.25 U |
| MW-42M3 | N | 12/17/2001 | SW8330 | 0.25 U |
| MW-42M3 | N | 10/1/2002 | SW8330 | 0.25 U |
| MW-42M3 | N | 5/7/2003 | SW8330 | 0.25 U |
| MW-42M3 | N | 10/10/2003 | SW8330 | 0.25 U |
| MW-42M3 | N | 2/11/2004 | SW8330 | 0.25 U |
| MW-42M3 | N | 5/11/2004 | SW8330 | 0.25 U |
| MW-42M3 | N | 8/25/2004 | SW8330 | 0.25 U |
| MW-42M3 | N | 2/28/2005 | SW8330 | 0.25 U |
| MW-42M3 | N | 5/10/2005 | SW8330 | 0.25 U |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-42M3 | FD | 9/14/2005 | SW8330 | 0.25 U |
| MW-42M3 | N | 9/14/2005 | SW8330 | 0.25 U |
| MW-42M3 | N | 12/16/2005 | SW8330 | 0.25 U |
| MW-42M3 | N | 4/27/2006 | SW8330 | 0.25 U |
| MW-42M3 | FD | 11/2/2006 | SW8330 | 0.25 U |
| MW-42M3 | N | 11/2/2006 | SW8330 | 0.25 U |
| MW-42M3 | N | 5/29/2007 | SW8330 | 0.25 U |
| MW-42M3 | N | 11/13/2007 | SW8330 | 0.25 U |
| MW-42M3 | N | 6/10/2008 | SW8330 | 0.25 U |
| MW-42M3 | N | 12/10/2008 | SW8330 | 0.25 U |
| MW-42M3 | N | 6/22/2009 | SW8330 | 0.25 U |
| MW-42M3 | N | 12/10/2009 | SW8330 | 0.25 U |
| MW-42M3 | N | 6/23/2010 | SW8330 | 0.2 U |
| MW-42M3 | N | 12/8/2010 | SW8330 | 0.2 U |
| MW-42M3 | N | 6/6/2011 | SW8330 | 0.2 U |
| MW-42M3 | N | 11/22/2011 | SW8330 | 0.2 U |
| MW-43M2 | N | 5/26/1999 | SW8330 | 0.64 J |
| MW-43M2 | N | 8/23/1999 | SW8330 | 0.66 |
| MW-43M2 | N | 11/18/1999 | SW8330 | 0.52 J |
| MW-43M2 | N | 5/31/2000 | SW8330 | 0.42 J |
| MW-43M2 | N | 8/15/2000 | SW8330 | 0.47 |
| MW-43M2 | N | 12/5/2000 | SW8330 | 0.47 J |
| MW-43M2 | N | 5/2/2001 | SW8330 | 0.52 |
| MW-43M2 | N | 8/7/2001 | SW8330 | 0.56 J |
| MW-43M2 | N | 12/15/2001 | SW8330 | 0.64 |
| MW-43M2 | N | 5/15/2002 | SW8330 | 0.72 |
| MW-43M2 | N | 8/16/2002 | SW8330 | 0.73 |
| MW-43M2 | N | 2/4/2003 | SW8330 | 1.2 J |
| MW-43M2 | N | 4/14/2003 | SW8330 | 1.6 |
| MW-43M2 | N | 10/16/2003 | SW8330 | 1.8 |
| MW-43M2 | FD | 1/27/2004 | SW8330 | 1.8 |
| MW-43M2 | N | 1/27/2004 | SW8330 | 1.8 |
| MW-43M2 | N | 4/27/2004 | SW8330 | 2 |
| MW-43M2 | N | 9/21/2004 | SW8330 | 2.1 |
| MW-43M2 | FD | 3/8/2005 | SW8330 | 2.1 |
| MW-43M2 | N | 3/8/2005 | SW8330 | 2.2 |
| MW-43M2 | N | 5/11/2005 | SW8330 | 2.1 |
| MW-43M2 | N | 9/6/2005 | SW8330 | 1.9 |
| MW-43M2 | FD | 9/6/2005 | SW8330 | 1.9 |
| MW-43M2 | N | 12/16/2005 | SW8330 | 1.8 |
| MW-43M2 | FD | 12/16/2005 | SW8330 | 1.8 |
| MW-43M2 | N | 5/4/2006 | SW8330 | 7.3 |
| MW-43M2 | N | 11/1/2006 | SW8330 | 2.4 |
| MW-43M2 | N | 5/8/2007 | SW8330 | 1.8 |
| MW-43M2 | N | 10/23/2007 | SW8330 | 2 |
| MW-43M2 | N | 5/21/2008 | SW8330 | 2 |
| MW-43M2 | N | 12/11/2008 | SW8330 | 1.5 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-43M2 | N | 6/2/2009 | SW8330 | 1.3 |
| MW-43M2 | N | 1/4/2010 | SW8330 | 1.2 |
| MW-43M2 | N | 6/3/2010 | SW8330 | 1.1 |
| MW-43M2 | N | 11/16/2010 | SW8330 | 1.02 |
| MW-43M2 | N | 6/2/2011 | SW8330 | 0.71 |
| MW-43M2 | N | 11/22/2011 | SW8330 | 0.6 |
| MW-44M1 | N | 9/20/1999 | SW8330 | 0.25 U |
| MW-44M1 | N | 12/30/1999 | SW8330 | 0.25 U |
| MW-44M1 | N | 12/30/1999 | SW8330 | 0.25 U |
| MW-44M1 | N | 4/3/2000 | SW8330 | 0.25 U |
| MW-44M1 | N | 9/1/2000 | SW8330 | 0.25 U |
| MW-44M1 | N | 12/28/2000 | SW8330 | 0.25 U |
| MW-44M1 | N | 5/8/2001 | SW8330 | 0.25 U |
| MW-44M1 | N | 8/23/2001 | SW8330 | 0.25 U |
| MW-44M1 | N | 11/28/2001 | SW8330 | 0.25 U |
| MW-44M1 | N | 8/15/2002 | SW8330 | 0.25 U |
| MW-44M1 | FD | 4/8/2003 | SW8330 | 0.25 U |
| MW-44M1 | N | 4/8/2003 | SW8330 | 0.25 U |
| MW-44M1 | N | 4/30/2004 | SW8330 | 0.25 U |
| MW-44M1 | N | 9/28/2004 | SW8330 | 0.25 U |
| MW-44M1 | N | 11/10/2004 | SW8330 | 0.25 U |
| MW-44M1 | N | 4/27/2005 | SW8330 | 0.25 U |
| MW-44M1 | N | 9/8/2005 | SW8330 | 0.25 U |
| MW-44M1 | N | 12/14/2005 | SW8330 | 0.25 U |
| MW-44M1 | N | 4/20/2006 | SW8330 | 0.25 U |
| MW-44M1 | N | 5/11/2007 | SW8330 | 0.25 U |
| MW-44M1 | N | 5/28/2008 | SW8330 | 0.25 U |
| MW-44M1 | N | 6/17/2009 | SW8330 | 0.25 U |
| MW-44M1 | N | 6/2/2010 | SW8330 | 0.2 U |
| MW-44M1 | N | 5/31/2011 | SW8330 | 0.2 U |
| MW-477M1 | N | 1/8/2007 | SW8330 | 0.25 U |
| MW-477M1 | N | 5/10/2007 | SW8330 | 19 U |
| MW-477M1 | N | 9/10/2007 | SW8330 | 0.25 U |
| MW-477M1 | N | 6/26/2008 | SW8330 | 0.25 U |
| MW-477M1 | N | 5/29/2009 | SW8330 | 0.25 U |
| MW-477M1 | N | 5/12/2010 | SW8330 | 0.2 U |
| MW-477M1 | N | 5/20/2011 | SW8330 | 0.25 |
| MW-477M2 | N | 1/8/2007 | SW8330 | 7.3 |
| MW-477M2 | N | 5/10/2007 | SW8330 | 3.8 |
| MW-477M2 | FD | 9/10/2007 | SW8330 | 3.3 |
| MW-477M2 | N | 9/10/2007 | SW8330 | 3.2 |
| MW-477M2 | N | 6/26/2008 | SW8330 | 3.5 |
| MW-477M2 | N | 5/29/2009 | SW8330 | 3.7 |
| MW-477M2 | N | 5/12/2010 | SW8330 | 7.4 |
| MW-477M2 | N | 5/20/2011 | SW8330 | 6.13 |
| MW-477M2 | FD | 5/20/2011 | SW8330 | 6 |
| MW-485M1 | N | 4/18/2007 | SW8330 | 7 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-485M1 | N | 8/13/2007 | SW8330 | 5.8 |
| MW-485M1 | N | 12/11/2007 | SW8330 | 5 |
| MW-485M1 | N | 6/26/2008 | SW8330 | 6 |
| MW-485M1 | N | 5/22/2009 | SW8330 | 4.9 |
| MW-485M1 | N | 5/12/2010 | SW8330 | 1.8 |
| MW-485M1 | N | 5/20/2011 | SW8330 | 5.87 |
| MW-486M1 | N | 4/18/2007 | SW8330 | 8.4 |
| MW-486M1 | FD | 8/14/2007 | SW8330 | 5.9 |
| MW-486M1 | N | 8/14/2007 | SW8330 | 6 |
| MW-486M1 | N | 12/11/2007 | SW8330 | 5.6 |
| MW-486M1 | N | 6/26/2008 | SW8330 | 8 |
| MW-486M1 | FD | 6/26/2008 | SW8330 | 7.9 |
| MW-486M1 | FD | 5/29/2009 | SW8330 | 9.6 |
| MW-486M1 | N | 5/29/2009 | SW8330 | 9.2 |
| MW-486M1 | FD | 5/12/2010 | SW8330 | 3.5 |
| MW-486M1 | N | 5/12/2010 | SW8330 | 4 |
| MW-486M1 | N | 5/13/2011 | SW8330 | 0.94 |
| MW-487M2 | N | 4/18/2007 | SW8330 | 8.1 |
| MW-487M2 | FD | 4/18/2007 | SW8330 | 8.2 |
| MW-487M2 | N | 8/15/2007 | SW8330 | 8.3 |
| MW-487M2 | N | 12/13/2007 | SW8330 | 7.6 |
| MW-487M2 | N | 6/30/2008 | SW8330 | 6.8 |
| MW-487M2 | FD | 5/22/2009 | SW8330 | 4 |
| MW-487M2 | N | 5/22/2009 | SW8330 | 3.9 |
| MW-487M2 | N | 6/1/2010 | SW8330 | 2.5 |
| MW-487M2 | FD | 6/1/2010 | SW8330 | 2.7 |
| MW-487M2 | N | 5/31/2011 | SW8330 | 1.91 |
| MW-50D | N | 4/27/1999 | SW8330 | 0.25 U |
| MW-50D | N | 4/27/1999 | SW8330 | 0.25 U |
| MW-50D | N | 8/24/1999 | SW8330 | 0.25 U |
| MW-50D | N | 11/4/1999 | SW8330 | 0.25 U |
| MW-50D | FD | 5/15/2000 | SW8330 | 0.25 UJ |
| MW-50D | N | 5/15/2000 | SW8330 | 0.25 UJ |
| MW-50D | N | 8/14/2000 | SW8330 | 0.25 U |
| MW-50D | N | 11/13/2000 | SW8330 | 0.25 U |
| MW-50D | N | 5/14/2001 | SW8330 | 0.25 U |
| MW-50D | FD | 5/14/2001 | SW8330 | 0.25 U |
| MW-50D | FD | 8/6/2001 | SW8330 | 0.25 U |
| MW-50D | N | 8/6/2001 | SW8330 | 0.25 U |
| MW-50D | N | 12/4/2001 | SW8330 | 0.25 U |
| MW-50D | N | 5/9/2002 | SW8330 | 0.25 U |
| MW-50D | N | 8/14/2002 | SW8330 | 0.25 U |
| MW-50D | N | 1/31/2003 | SW8330 | 0.25 U |
| MW-50D | N | 4/7/2003 | SW8330 | 0.25 U |
| MW-50D | N | 11/18/2003 | SW8330 | 0.25 U |
| MW-50D | N | 1/7/2004 | SW8330 | 0.25 U |
| MW-50D | N | 7/12/2004 | SW8330 | 0.25 U |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-50D | N | 8/16/2004 | SW8330 | 0.25 U |
| MW-50D | N | 1/5/2005 | SW8330 | 0.25 U |
| MW-50D | N | 4/22/2005 | SW8330 | 0.25 U |
| MW-50D | N | 8/24/2005 | SW8330 | 0.41 J |
| MW-50D | N | 12/8/2005 | SW8330 | 0.52 J |
| MW-50D | N | 10/18/2006 | SW8330 | 0.3 |
| MW-50D | N | 5/17/2007 | SW8330 | 0.25 U |
| MW-50D | N | 6/11/2008 | SW8330 | 0.25 U |
| MW-50D | N | 6/22/2009 | SW8330 | 0.25 U |
| MW-50D | N | 6/22/2010 | SW8330 | 0.2 U |
| MW-50D | N | 6/8/2011 | SW8330 | 0.2 U |
| MW-51M2 | N | 4/27/1999 | SW8330 | 0.25 U |
| MW-51M2 | N | 8/25/1999 | SW8330 | 0.25 U |
| MW-51M2 | N | 11/3/1999 | SW8330 | 0.25 U |
| MW-51M2 | FD | 8/19/2004 | SW8330 | 1.7 |
| MW-51M2 | N | 8/19/2004 | SW8330 | 1.7 |
| MW-51M2 | N | 5/9/2005 | SW8330 | 1.2 |
| MW-51M2 | FD | 8/15/2005 | SW8330 | 1.1 |
| MW-51M2 | N | 8/15/2005 | SW8330 | 1.1 |
| MW-51M2 | N | 12/15/2005 | SW8330 | 0.85 |
| MW-51M2 | FD | 4/24/2006 | SW8330 | 0.86 |
| MW-51M2 | N | 4/24/2006 | SW8330 | 0.82 |
| MW-51M2 | N | 5/16/2007 | SW8330 | 1.3 |
| MW-51M2 | N | 6/24/2008 | SW8330 | 1.8 |
| MW-51M2 | N | 6/29/2009 | SW8330 | 1.3 |
| MW-51M2 | N | 6/14/2010 | SW8330 | 0.55 |
| MW-51M2 | N | 6/13/2011 | SW8330 | 0.54 |
| MW-59S | N | 3/30/1999 | SW8330 | 1 |
| MW-59S | N | 5/10/1999 | SW8330 | 0.82 J |
| MW-59S | N | 9/1/1999 | SW8330 | 0.68 |
| MW-59S | N | 11/22/1999 | SW8330 | 0.6 |
| MW-59S | N | 6/8/2000 | SW8330 | 0.83 |
| MW-59S | N | 9/18/2000 | SW8330 | 0.78 J |
| MW-59S | N | 12/16/2000 | SW8330 | 0.89 |
| MW-59S | N | 11/13/2003 | SW8330 | 0.27 |
| MW-59S | N | 10/31/2005 | SW8330 | 0.31 J |
| MW-59S | N | 1/19/2006 | SW8330 | 0.34 |
| MW-59S | N | 11/15/2006 | SW8330 | 0.5 |
| MW-59S | N | 6/8/2007 | SW8330 | 0.54 |
| MW-59S | N | 5/22/2008 | SW8330 | 0.64 |
| MW-59S | N | 6/25/2009 | SW8330 | 0.56 |
| MW-59S | N | 5/27/2010 | SW8330 | 0.57 |
| MW-59S | N | 6/15/2011 | SW8330 | 0.2 U |
| MW-85M1 | N | 5/22/2000 | SW8330 | 29 |
| MW-85M1 | N | 2/10/2001 | SW8330 | 24 |
| MW-85M1 | N | 6/16/2001 | SW8330 | 27 |
| MW-85M1 | N | 9/26/2001 | SW8330 | 13 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-85M1 | N | 12/15/2001 | SW8330 | 19 |
| MW-85M1 | N | 5/22/2002 | SW8330 | 7 |
| MW-85M1 | N | 9/12/2002 | SW8330 | 4.2 |
| MW-85M1 | N | 1/13/2003 | SW8330 | 0.25 U |
| MW-85M1 | N | 4/1/2003 | SW8330 | 8 |
| MW-85M1 | N | 10/30/2003 | SW8330 | 1.8 |
| MW-85M1 | FD | 3/2/2004 | SW8330 | 2.1 |
| MW-85M1 | N | 3/2/2004 | SW8330 | 2.2 |
| MW-85M1 | N | 4/29/2004 | SW8330 | 1.1 |
| MW-85M1 | N | 9/24/2004 | SW8330 | 0.34 J |
| MW-85M1 | FD | 11/19/2004 | SW8330 | 0.28 J |
| MW-85M1 | N | 11/19/2004 | SW8330 | 0.29 J |
| MW-85M1 | FD | 5/3/2005 | SW8330 | 1.7 |
| MW-85M1 | N | 5/3/2005 | SW8330 | 1.7 |
| MW-85M1 | N | 7/25/2005 | SW8330 | 0.94 |
| MW-85M1 | FD | 7/25/2005 | SW8330 | 0.91 |
| MW-85M1 | N | 12/12/2005 | SW8330 | 1.6 |
| MW-85M1 | N | 4/25/2006 | SW8330 | 0.65 J |
| MW-85M1 | N | 10/25/2006 | SW8330 | 0.43 |
| MW-85M1 | N | 5/22/2007 | SW8330 | 0.25 U |
| MW-85M1 | N | 12/6/2007 | SW8330 | 0.4 |
| MW-85M1 | N | 6/3/2008 | SW8330 | 0.89 |
| MW-85M1 | N | 11/13/2008 | SW8330 | 0.73 |
| MW-85M1 | N | 6/1/2009 | SW8330 | 0.29 |
| MW-85M1 | N | 12/17/2009 | SW8330 | 0.28 |
| MW-85M1 | N | 6/2/2010 | SW8330 | 0.19 J |
| MW-85M1 | N | 11/15/2010 | SW8330 | 1 |
| MW-85M1 | N | 6/9/2011 | SW8330 | 0.2 U |
| MW-85M1 | N | 12/2/2011 | SW8330 | 0.2 U |
| MW-86M2 | N | 4/28/2000 | SW8330 | 1.8 J |
| MW-86M2 | N | 9/14/2000 | SW8330 | 1.2 |
| MW-86M2 | FD | 9/14/2000 | SW8330 | 1.2 |
| MW-86M2 | FD | 1/3/2001 | SW8330 | 1.9 |
| MW-86M2 | N | 1/3/2001 | SW8330 | 1.8 |
| MW-86M2 | N | 9/27/2001 | SW8330 | 3 |
| MW-86M2 | N | 11/30/2001 | SW8330 | 2.7 |
| MW-86M2 | N | 5/16/2002 | SW8330 | 2.1 |
| MW-86M2 | N | 8/16/2002 | SW8330 | 1.2 |
| MW-86M2 | N | 1/15/2003 | SW8330 | 0.86 |
| MW-86M2 | N | 4/11/2003 | SW8330 | 0.76 |
| MW-86M2 | N | 11/14/2003 | SW8330 | 0.74 |
| MW-86M2 | N | 1/22/2004 | SW8330 | 1.1 J |
| MW-86M2 | N | 7/12/2004 | SW8330 | 0.88 |
| MW-86M2 | N | 8/31/2004 | SW8330 | 1 |
| MW-86M2 | N | 12/15/2004 | SW8330 | 1.2 |
| MW-86M2 | N | 3/31/2005 | SW8330 | 1.1 |
| MW-86M2 | FD | 3/31/2005 | SW8330 | 1.2 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-86M2 | N | 8/22/2005 | SW8330 | 0.88 |
| MW-86M2 | N | 12/6/2005 | SW8330 | 0.67 J |
| MW-86M2 | N | 10/19/2006 | SW8330 | 0.7 |
| MW-86M2 | N | 5/8/2007 | SW8330 | 0.88 |
| MW-86M2 | N | 10/19/2007 | SW8330 | 0.61 |
| MW-86M2 | N | 6/3/2008 | SW8330 | 0.5 |
| MW-86M2 | N | 12/10/2008 | SW8330 | 0.45 |
| MW-86M2 | N | 6/19/2009 | SW8330 | 0.73 |
| MW-86M2 | N | 1/5/2010 | SW8330 | 0.72 |
| MW-86M2 | N | 6/3/2010 | SW8330 | 0.4 |
| MW-86M2 | N | 11/5/2010 | SW8330 | 0.64 |
| MW-86M2 | N | 6/2/2011 | SW8330 | 0.72 |
| MW-86M2 | N | 11/30/2011 | SW8330 | 0.37 |
| MW-86S | N | 4/28/2000 | SW8330 | 2.5 J |
| MW-86S | N | 9/18/2000 | SW8330 | 1.3 |
| MW-86S | N | 1/3/2001 | SW8330 | 1.3 |
| MW-86S | N | 9/27/2001 | SW8330 | 1.3 |
| MW-86S | N | 11/30/2001 | SW8330 | 1.9 |
| MW-86S | N | 8/16/2002 | SW8330 | 4.7 J |
| MW-86S | N | 8/1/2003 | SW8330 | 0.76 |
| MW-86S | N | 11/14/2003 | SW8330 | 1.1 |
| MW-86S | N | 1/26/2004 | SW8330 | 1.9 |
| MW-86S | N | 7/12/2004 | SW8330 | 2.7 |
| MW-86S | N | 9/29/2004 | SW8330 | 3.4 |
| MW-86S | N | 12/15/2004 | SW8330 | 3.6 |
| MW-86S | N | 3/31/2005 | SW8330 | 3.1 |
| MW-86S | N | 8/22/2005 | SW8330 | 0.54 J |
| MW-86S | N | 12/6/2005 | SW8330 | 1 J |
| MW-86S | N | 4/18/2006 | SW8330 | 0.51 |
| MW-86S | N | 10/19/2006 | SW8330 | 1.3 |
| MW-86S | N | 5/8/2007 | SW8330 | 1.8 |
| MW-86S | N | 10/19/2007 | SW8330 | 0.9 |
| MW-86S | N | 6/3/2008 | SW8330 | 1.1 |
| MW-86S | N | 12/10/2008 | SW8330 | 0.74 |
| MW-86S | N | 6/19/2009 | SW8330 | 0.72 |
| MW-86S | N | 1/5/2010 | SW8330 | 0.35 |
| MW-86S | N | 6/3/2010 | SW8330 | 0.2 U |
| MW-86S | N | 11/5/2010 | SW8330 | 0.54 |
| MW-86S | N | 6/2/2011 | SW8330 | 1.25 |
| MW-86S | N | 11/30/2011 | SW8330 | 1.05 |
| MW-87M1 | N | 4/28/2000 | SW8330 | 6.5 J |
| MW-87M1 | N | 9/14/2000 | SW8330 | 5 |
| MW-87M1 | N | 1/10/2001 | SW8330 | 4.6 |
| MW-87M1 | N | 9/27/2001 | SW8330 | 5 |
| MW-87M1 | N | 12/3/2001 | SW8330 | 5.2 |
| MW-87M1 | N | 5/17/2002 | SW8330 | 5.2 |
| MW-87M1 | N | 10/4/2002 | SW8330 | 4.4 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-87M1 | N | 1/15/2003 | SW8330 | 3.4 |
| MW-87M1 | N | 4/7/2003 | SW8330 | 3.1 |
| MW-87M1 | N | 10/17/2003 | SW8330 | 2.1 |
| MW-87M1 | N | 1/22/2004 | SW8330 | 1.9 |
| MW-87M1 | N | 7/1/2004 | SW8330 | 1.3 J |
| MW-87M1 | N | 7/1/2004 | SW8330 | 0 R |
| MW-87M1 | N | 8/18/2004 | SW8330 | 2 |
| MW-87M1 | N | 1/7/2005 | SW8330 | 1.9 |
| MW-87M1 | N | 5/3/2005 | SW8330 | 2.1 J |
| MW-87M1 | N | 10/28/2005 | SW8330 | 2 |
| MW-87M1 | N | 1/12/2006 | SW8330 | 1.7 |
| MW-87M1 | N | 4/25/2006 | SW8330 | 1.9 |
| MW-87M1 | N | 10/25/2006 | SW8330 | 1.9 |
| MW-87M1 | FD | 5/9/2007 | SW8330 | 1.7 |
| MW-87M1 | N | 5/9/2007 | SW8330 | 1.8 |
| MW-87M1 | N | 10/23/2007 | SW8330 | 1.5 |
| MW-87M1 | FD | 5/29/2008 | SW8330 | 1.9 |
| MW-87M1 | N | 5/29/2008 | SW8330 | 1.8 |
| MW-87M1 | FD | 12/9/2008 | SW8330 | 1.6 |
| MW-87M1 | N | 12/9/2008 | SW8330 | 1.7 |
| MW-87M1 | N | 6/1/2009 | SW8330 | 1.4 |
| MW-87M1 | N | 1/4/2010 | SW8330 | 1.4 |
| MW-87M1 | N | 6/14/2010 | SW8330 | 1.5 |
| MW-87M1 | N | 11/16/2010 | SW8330 | 0.61 |
| MW-87M1 | N | 6/1/2011 | SW8330 | 1.13 |
| MW-87M1 | N | 11/28/2011 | SW8330 | 0.89 |
| MW-88M2 | N | 5/24/2000 | SW8330 | 7 |
| MW-88M2 | N | 9/21/2000 | SW8330 | 7.7 |
| MW-88M2 | N | 1/10/2001 | SW8330 | 6.8 |
| MW-88M2 | N | 9/28/2001 | SW8330 | 6.4 |
| MW-88M2 | N | 12/4/2001 | SW8330 | 6.5 |
| MW-88M2 | N | 5/17/2002 | SW8330 | 6.1 |
| MW-88M2 | N | 10/4/2002 | SW8330 | 5.6 |
| MW-88M2 | N | 1/16/2003 | SW8330 | 5.1 |
| MW-88M2 | N | 4/2/2003 | SW8330 | 4.5 |
| MW-88M2 | N | 10/16/2003 | SW8330 | 4.4 |
| MW-88M2 | N | 1/22/2004 | SW8330 | 4.1 |
| MW-88M2 | FD | 4/27/2004 | SW8330 | 3.7 |
| MW-88M2 | N | 4/27/2004 | SW8330 | 3.7 |
| MW-88M2 | N | 8/20/2004 | SW8330 | 3.6 |
| MW-88M2 | FD | 12/29/2004 | SW8330 | 3.4 |
| MW-88M2 | N | 12/29/2004 | SW8330 | 3.4 |
| MW-88M2 | N | 4/28/2005 | SW8330 | 3.3 |
| MW-88M2 | N | 9/20/2005 | SW8330 | 3.2 J |
| MW-88M2 | N | 12/6/2005 | SW8330 | 3.1 |
| MW-88M2 | N | 10/16/2006 | SW8330 | 3 |
| MW-88M2 | N | 5/9/2007 | SW8330 | 2.8 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-88M2 | N | 10/19/2007 | SW8330 | 2.8 |
| MW-88M2 | FD | 10/19/2007 | SW8330 | 2.8 |
| MW-88M2 | N | 6/2/2008 | SW8330 | 2.5 |
| MW-88M2 | N | 12/10/2008 | SW8330 | 2.3 |
| MW-88M2 | N | 6/9/2009 | SW8330 | 2.6 J |
| MW-88M2 | N | 12/30/2009 | SW8330 | 2.1 |
| MW-88M2 | N | 6/8/2010 | SW8330 | 2.5 |
| MW-88M2 | N | 11/17/2010 | SW8330 | 1.83 |
| MW-88M2 | N | 6/1/2011 | SW8330 | 1.69 |
| MW-88M2 | N | 11/28/2011 | SW8330 | 1.79 |
| MW-89M2 | N | 5/26/2000 | SW8330 | 8.3 |
| MW-89M2 | N | 9/21/2000 | SW8330 | 8.3 |
| MW-89M2 | N | 1/11/2001 | SW8330 | 7.5 |
| MW-89M2 | N | 10/3/2001 | SW8330 | 6.8 |
| MW-89M2 | FD | 10/3/2001 | SW8330 | 6.9 |
| MW-89M2 | N | 12/3/2001 | SW8330 | 6.9 |
| MW-89M2 | N | 5/17/2002 | SW8330 | 6 |
| MW-89M2 | N | 10/4/2002 | SW8330 | 5.6 |
| MW-89M2 | N | 1/16/2003 | SW8330 | 5.6 |
| MW-89M2 | N | 4/17/2003 | SW8330 | 5.7 |
| MW-89M2 | N | 10/10/2003 | SW8330 | 6.2 |
| MW-89M2 | N | 1/23/2004 | SW8330 | 6.8 |
| MW-89M2 | N | 4/27/2004 | SW8330 | 6.9 |
| MW-89M2 | N | 10/5/2004 | SW8330 | 9.2 |
| MW-89M2 | N | 11/22/2004 | SW8330 | 9.9 |
| MW-89M2 | N | 3/28/2005 | SW8330 | 10 |
| MW-89M2 | N | 9/13/2005 | SW8330 | 13 J |
| MW-89M2 | N | 12/20/2005 | SW8330 | 12 |
| MW-89M2 | N | 4/18/2006 | SW8330 | 12 |
| MW-89M2 | FD | 4/18/2006 | SW8330 | 12 |
| MW-89M2 | N | 11/2/2006 | SW8330 | 14 |
| MW-89M2 | N | 5/9/2007 | SW8330 | 14 |
| MW-89M2 | FD | 5/9/2007 | SW8330 | 14 |
| MW-89M2 | N | 10/23/2007 | SW8330 | 18 |
| MW-89M2 | FD | 6/3/2008 | SW8330 | 19 |
| MW-89M2 | N | 6/3/2008 | SW8330 | 19 |
| MW-89M2 | FD | 12/10/2008 | SW8330 | 20 |
| MW-89M2 | N | 12/10/2008 | SW8330 | 19 |
| MW-89M2 | N | 6/2/2009 | SW8330 | 21 |
| MW-89M2 | FD | 6/2/2009 | SW8330 | 20 |
| MW-89M2 | N | 1/4/2010 | SW8330 | 17 |
| MW-89M2 | FD | 1/4/2010 | SW8330 | 16 |
| MW-89M2 | N | 6/3/2010 | SW8330 | 16 |
| MW-89M2 | FD | 6/3/2010 | SW8330 | 15 |
| MW-89M2 | N | 11/16/2010 | SW8330 | 14.6 |
| MW-89M2 | N | 11/16/2010 | SW8330 | 14.8 J |
| MW-89M2 | FD | 11/16/2010 | SW8330 | 13.7 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-89M2 | N | 6/1/2011 | SW8330 | 15.5 |
| MW-89M2 | FD | 6/1/2011 | SW8330 | 14.9 |
| MW-89M2 | FD | 11/28/2011 | SW8330 | 16.6 |
| MW-89M2 | N | 11/28/2011 | SW8330 | 17.4 |
| MW-89M3 | N | 5/23/2000 | SW8330 | 1.6 |
| MW-89M3 | N | 9/21/2000 | SW8330 | 0.7 |
| MW-89M3 | N | 1/11/2001 | SW8330 | 0.4 J |
| MW-89M3 | N | 10/3/2001 | SW8330 | 0.25 U |
| MW-89M3 | N | 12/1/2001 | SW8330 | 0.25 U |
| MW-89M3 | FD | 12/1/2001 | SW8330 | 0.25 U |
| MW-89M3 | N | 5/17/2002 | SW8330 | 0.36 |
| MW-89M3 | N | 10/4/2002 | SW8330 | 0.42 J |
| MW-89M3 | N | 1/16/2003 | SW8330 | 0.25 U |
| MW-89M3 | FD | 4/17/2003 | SW8330 | 0.25 U |
| MW-89M3 | N | 4/17/2003 | SW8330 | 0.25 U |
| MW-89M3 | N | 10/10/2003 | SW8330 | 0.25 U |
| MW-89M3 | FD | 1/26/2004 | SW8330 | 0.25 U |
| MW-89M3 | N | 1/26/2004 | SW8330 | 0.25 U |
| MW-89M3 | N | 4/28/2004 | SW8330 | 0.25 U |
| MW-89M3 | N | 10/5/2004 | SW8330 | 0.25 U |
| MW-89M3 | FD | 11/22/2004 | SW8330 | 0.25 U |
| MW-89M3 | N | 11/22/2004 | SW8330 | 0.25 U |
| MW-89M3 | FD | 3/28/2005 | SW8330 | 0.25 U |
| MW-89M3 | N | 3/28/2005 | SW8330 | 0.25 U |
| MW-89M3 | N | 9/13/2005 | SW8330 | 0.25 U |
| MW-89M3 | N | 12/20/2005 | SW8330 | 0.35 U |
| MW-89M3 | N | 11/2/2006 | SW8330 | 0.53 |
| MW-89M3 | N | 6/3/2008 | SW8330 | 0.77 |
| MW-89M3 | N | 6/2/2009 | SW8330 | 0.26 |
| MW-89M3 | N | 6/3/2010 | SW8330 | 0.41 |
| MW-89M3 | N | 6/1/2011 | SW8330 | 0.2 U |
| MW-90S | N | 5/19/2000 | SW8330 | 3.4 J |
| MW-90S | N | 10/11/2000 | SW8330 | 1.1 |
| MW-90S | N | 1/20/2001 | SW8330 | 0.91 |
| MW-90S | N | 10/9/2001 | SW8330 | 1.2 |
| MW-90S | N | 12/16/2001 | SW8330 | 1.1 |
| MW-90S | N | 9/12/2002 | SW8330 | 0.89 |
| MW-90S | N | 1/23/2003 | SW8330 | 2.6 |
| MW-90S | N | 6/2/2003 | SW8330 | 0.62 |
| MW-90S | N | 11/19/2003 | SW8330 | 0.56 |
| MW-90S | N | 2/17/2004 | SW8330 | 1.1 |
| MW-90S | N | 5/6/2004 | SW8330 | 1.3 |
| MW-90S | N | 10/18/2004 | SW8330 | 0.6 |
| MW-90S | N | 11/19/2004 | SW8330 | 0.5 |
| MW-90S | N | 4/29/2005 | SW8330 | 1.8 |
| MW-90S | N | 10/17/2005 | SW8330 | 0.92 J |
| MW-90S | N | 1/17/2006 | SW8330 | 1.8 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-90S | FD | 4/19/2006 | SW8330 | 1.4 |
| MW-90S | N | 4/19/2006 | SW8330 | 1.4 |
| MW-90S | N | 5/10/2007 | SW8330 | 2.6 |
| MW-90S | N | 6/17/2008 | SW8330 | 1.1 |
| MW-90S | N | 6/16/2009 | SW8330 | 1.1 |
| MW-90S | N | 6/1/2010 | SW8330 | 0.98 |
| MW-90S | N | 5/31/2011 | SW8330 | 1.85 |
| MW-91M1 | N | 5/22/2000 | SW8330 | 18 |
| MW-91M1 | N | 11/7/2000 | SW8330 | 11 |
| MW-91M1 | FD | 11/7/2000 | SW8330 | 11 |
| MW-91M1 | N | 1/20/2001 | SW8330 | 12 |
| MW-91M1 | N | 10/3/2001 | SW8330 | 13 J |
| MW-91M1 | N | 11/29/2001 | SW8330 | 10 J |
| MW-91M1 | N | 5/20/2002 | SW8330 | 5.3 |
| MW-91M1 | FD | 5/20/2002 | SW8330 | 5.5 |
| MW-91M1 | N | 9/27/2002 | SW8330 | 4.6 |
| MW-91M1 | N | 1/31/2003 | SW8330 | 3.6 |
| MW-91M1 | N | 5/19/2003 | SW8330 | 3.3 |
| MW-91M1 | N | 11/14/2003 | SW8330 | 5.7 |
| MW-91M1 | N | 2/20/2004 | SW8330 | 6 |
| MW-91M1 | FD | 2/20/2004 | SW8330 | 6.1 |
| MW-91M1 | N | 5/5/2004 | SW8330 | 5.6 |
| MW-91M1 | N | 9/28/2004 | SW8330 | 4.5 |
| MW-91M1 | N | 11/10/2004 | SW8330 | 4.5 |
| MW-91M1 | N | 4/29/2005 | SW8330 | 4 |
| MW-91M1 | N | 11/10/2005 | SW8330 | 5 |
| MW-91M1 | FD | 1/24/2006 | SW8330 | 6.1 |
| MW-91M1 | N | 1/24/2006 | SW8330 | 6.2 |
| MW-91M1 | N | 4/19/2006 | SW8330 | 6.7 |
| MW-91M1 | N | 11/15/2006 | SW8330 | 10 |
| MW-91M1 | N | 5/10/2007 | SW8330 | 6.8 |
| MW-91M1 | N | 11/19/2007 | SW8330 | 11 |
| MW-91M1 | N | 6/6/2008 | SW8330 | 13 |
| MW-91M1 | N | 11/13/2008 | SW8330 | 7.8 |
| MW-91M1 | FD | 6/16/2009 | SW8330 | 4.2 |
| MW-91M1 | N | 6/16/2009 | SW8330 | 4.1 |
| MW-91M1 | N | 12/22/2009 | SW8330 | 2.78 |
| MW-91M1 | N | 12/22/2009 | SW8330 | 3.2 |
| MW-91M1 | FD | 12/22/2009 | SW8330 | 3.2 |
| MW-91M1 | N | 6/8/2010 | SW8330 | 2.8 |
| MW-91M1 | N | 11/22/2010 | SW8330 | 3.04 |
| MW-91M1 | N | 5/31/2011 | SW8330 | 3.12 |
| MW-91M1 | N | 12/2/2011 | SW8330 | 2.08 |
| MW-91S | N | 5/19/2000 | SW8330 | 12 |
| MW-91S | N | 11/7/2000 | SW8330 | 13 |
| MW-91S | N | 1/20/2001 | SW8330 | 12 |
| MW-91S | N | 10/9/2001 | SW8330 | 14 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-91S | N | 12/20/2001 | SW8330 | 20 |
| MW-91S | N | 5/20/2002 | SW8330 | 17 |
| MW-91S | N | 1/31/2003 | SW8330 | 17 |
| MW-91S | N | 5/21/2003 | SW8330 | 12 |
| MW-91S | N | 11/14/2003 | SW8330 | 16 |
| MW-91S | N | 2/20/2004 | SW8330 | 13 |
| MW-91S | N | 5/5/2004 | SW8330 | 10 |
| MW-91S | N | 9/28/2004 | SW8330 | 12 |
| MW-91S | N | 11/12/2004 | SW8330 | 11 |
| MW-91S | N | 4/29/2005 | SW8330 | 12 |
| MW-91S | N | 11/15/2005 | SW8330 | 16 J |
| MW-91S | N | 1/24/2006 | SW8330 | 24 |
| MW-91S | N | 1/24/2006 | SW8330 | 0 R |
| MW-91S | N | 4/19/2006 | SW8330 | 24 |
| MW-91S | N | 4/19/2006 | SW8330 | 24 R |
| MW-91S | FD | 5/10/2007 | SW8330 | 5.7 |
| MW-91S | N | 5/10/2007 | SW8330 | 5.5 |
| MW-91S | N | 6/6/2008 | SW8330 | 4.8 |
| MW-91S | FD | 6/6/2008 | SW8330 | 5 |
| MW-91S | N | 6/16/2009 | SW8330 | 5.6 |
| MW-91S | FD | 6/16/2009 | SW8330 | 5.7 |
| MW-91S | FD | 6/8/2010 | SW8330 | 2 J |
| MW-91S | N | 6/8/2010 | SW8330 | 2.1 J |
| MW-91S | FD | 5/31/2011 | SW8330 | 0.2 U |
| MW-91S | N | 5/31/2011 | SW8330 | 0.2 U |
| MW-93M1 | N | 5/26/2000 | SW8330 | 2.2 J |
| MW-93M1 | N | 11/7/2000 | SW8330 | 2.5 |
| MW-93M1 | N | 1/22/2001 | SW8330 | 2.4 J |
| MW-93M1 | FD | 1/22/2001 | SW8330 | 2.4 |
| MW-93M1 | N | 10/3/2001 | SW8330 | 3.2 |
| MW-93M1 | N | 11/28/2001 | SW8330 | 3.8 |
| MW-93M1 | N | 5/20/2002 | SW8330 | 4.6 |
| MW-93M1 | N | 9/24/2002 | SW8330 | 4.9 |
| MW-93M1 | N | 2/3/2003 | SW8330 | 5.7 |
| MW-93M1 | N | 3/31/2003 | SW8330 | 5.8 |
| MW-93M1 | N | 10/22/2003 | SW8330 | 4.2 |
| MW-93M1 | N | 2/9/2004 | SW8330 | 3.2 |
| MW-93M1 | FD | 7/15/2004 | SW8330 | 2.5 |
| MW-93M1 | N | 7/15/2004 | SW8330 | 2.6 |
| MW-93M1 | N | 9/28/2004 | SW8330 | 1.7 |
| MW-93M1 | N | 11/12/2004 | SW8330 | 1.9 |
| MW-93M1 | N | 4/28/2005 | SW8330 | 0.89 J |
| MW-93M1 | N | 11/3/2005 | SW8330 | 0.62 J |
| MW-93M1 | N | 1/19/2006 | SW8330 | 0.48 |
| MW-93M1 | N | 10/25/2006 | SW8330 | 0.25 |
| MW-93M1 | N | 5/11/2007 | SW8330 | 0.25 U |
| MW-93M1 | N | 5/28/2008 | SW8330 | 0.42 |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-93M1 | N | 6/16/2009 | SW8330 | 0.69 |
| MW-93M1 | N | 6/2/2010 | SW8330 | 0.74 |
| MW-93M1 | N | 6/9/2011 | SW8330 | 0.4 |
| MW-94M1 | N | 5/26/2000 | SW8330 | 0.3 |
| MW-94M1 | FD | 10/3/2000 | SW8330 | 0.25 U |
| MW-94M1 | N | 10/3/2000 | SW8330 | 0.25 U |
| MW-94M1 | FD | 1/12/2001 | SW8330 | 0.25 U |
| MW-94M1 | N | 1/12/2001 | SW8330 | 0.25 U |
| MW-94M1 | N | 10/2/2001 | SW8330 | 0.53 J |
| MW-94M1 | N | 1/8/2002 | SW8330 | 0.62 |
| MW-94M1 | FD | 1/8/2002 | SW8330 | 0.6 J |
| MW-94M1 | N | 5/17/2002 | SW8330 | 0.82 |
| MW-94M1 | N | 9/26/2002 | SW8330 | 1.1 |
| MW-94M1 | N | 2/4/2003 | SW8330 | 0.93 |
| MW-94M1 | N | 4/2/2003 | SW8330 | 1.1 |
| MW-94M1 | N | 10/16/2003 | SW8330 | 1.8 |
| MW-94M1 | N | 10/23/2003 | SW8330 | 1.8 |
| MW-94M1 | N | 1/29/2004 | SW8330 | 0.34 |
| MW-94M1 | N | 6/14/2004 | SW8330 | 0.41 |
| MW-94M1 | N | 9/2/2004 | SW8330 | 0.33 |
| MW-94M1 | N | 2/3/2005 | SW8330 | 0.25 U |
| MW-94M1 | N | 5/5/2005 | SW8330 | 0.34 |
| MW-94M1 | N | 11/1/2005 | SW8330 | 0.63 |
| MW-94M1 | N | 1/20/2006 | SW8330 | 0.98 |
| MW-94M1 | N | 4/26/2006 | SW8330 | 1.7 |
| MW-94M1 | N | 5/9/2007 | SW8330 | 0.77 |
| MW-94M1 | N | 5/20/2008 | SW8330 | 1.7 |
| MW-94M1 | N | 7/1/2009 | SW8330 | 1.1 |
| MW-94M1 | N | 6/8/2010 | SW8330 | 0.97 |
| MW-94M1 | N | 6/15/2011 | SW8330 | 0.47 |
| MW-94M2 | N | 5/30/2000 | SW8330 | 1.1 |
| MW-94M2 | N | 10/3/2000 | SW8330 | 1.1 J |
| MW-94M2 | N | 1/11/2001 | SW8330 | 1.3 J |
| MW-94M2 | N | 10/2/2001 | SW8330 | 0.41 |
| MW-94M2 | N | 1/8/2002 | SW8330 | 0.46 |
| MW-94M2 | N | 5/17/2002 | SW8330 | 0.7 |
| MW-94M2 | N | 9/27/2002 | SW8330 | 0.39 |
| MW-94M2 | N | 2/4/2003 | SW8330 | 0.25 U |
| MW-94M2 | FD | 2/4/2003 | SW8330 | 0.25 U |
| MW-94M2 | N | 4/2/2003 | SW8330 | 0.26 |
| MW-94M2 | N | 10/22/2003 | SW8330 | 0.25 U |
| MW-94M2 | N | 1/29/2004 | SW8330 | 1 |
| MW-94M2 | N | 6/14/2004 | SW8330 | 0.69 |
| MW-94M2 | FD | 6/14/2004 | SW8330 | 0.67 |
| MW-94M2 | N | 9/2/2004 | SW8330 | 0.73 |
| MW-94M2 | FD | 9/2/2004 | SW8330 | 0.76 |
| MW-94M2 | FD | 2/3/2005 | SW8330 | 0.28 J |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-94M2 | N | 2/3/2005 | SW8330 | 0.26 J |
| MW-94M2 | N | 5/5/2005 | SW8330 | 0.25 U |
| MW-94M2 | FD | 5/5/2005 | SW8330 | 0.25 U |
| MW-94M2 | N | 11/1/2005 | SW8330 | 0.26 J |
| MW-94M2 | N | 1/20/2006 | SW8330 | 0.25 U |
| MW-94M2 | N | 4/26/2006 | SW8330 | 0.25 U |
| MW-94M2 | N | 5/9/2007 | SW8330 | 0.25 U |
| MW-94M2 | N | 5/20/2008 | SW8330 | 0.25 U |
| MW-94M2 | N | 7/1/2009 | SW8330 | 0.25 U |
| MW-94M2 | N | 6/8/2010 | SW8330 | 0.2 U |
| MW-94M2 | N | 6/15/2011 | SW8330 | 0.3 |
| MW-95M1 | N | 5/25/2000 | SW8330 | 2.2 |
| MW-95M1 | FD | 9/21/2000 | SW8330 | 1.7 |
| MW-95M1 | N | 9/21/2000 | SW8330 | 1.7 |
| MW-95M1 | N | 1/10/2001 | SW8330 | 0.25 U |
| MW-95M1 | N | 10/1/2001 | SW8330 | 2.2 |
| MW-95M1 | N | 12/15/2001 | SW8330 | 3.2 |
| MW-95M1 | FD | 5/20/2002 | SW8330 | 6.2 |
| MW-95M1 | N | 5/20/2002 | SW8330 | 6.1 |
| MW-95M1 | N | 9/27/2002 | SW8330 | 5.4 |
| MW-95M1 | N | 2/4/2003 | SW8330 | 4.1 |
| MW-95M1 | N | 4/11/2003 | SW8330 | 3.5 |
| MW-95M1 | FD | 4/11/2003 | SW8330 | 3.6 |
| MW-95M1 | N | 10/15/2003 | SW8330 | 5.5 |
| MW-95M1 | N | 2/20/2004 | SW8330 | 5.1 |
| MW-95M1 | N | 4/30/2004 | SW8330 | 5.5 |
| MW-95M1 | N | 8/27/2004 | SW8330 | 5.1 |
| MW-95M1 | N | 12/30/2004 | SW8330 | 5.2 |
| MW-95M1 | N | 5/5/2005 | SW8330 | 5.3 |
| MW-95M1 | N | 8/31/2005 | SW8330 | 4.9 |
| MW-95M1 | N | 12/6/2005 | SW8330 | 4.9 |
| MW-95M1 | FD | 12/6/2005 | SW8330 | 4.9 |
| MW-95M1 | N | 4/18/2006 | SW8330 | 3.5 |
| MW-95M1 | N | 10/17/2006 | SW8330 | 3 |
| MW-95M1 | N | 5/9/2007 | SW8330 | 3.5 |
| MW-95M1 | N | 10/23/2007 | SW8330 | 4.5 |
| MW-95M1 | N | 6/2/2008 | SW8330 | 3.9 |
| MW-95M1 | N | 12/10/2008 | SW8330 | 2.7 |
| MW-95M1 | N | 6/9/2009 | SW8330 | 2.5 J |
| MW-95M1 | N | 1/4/2010 | SW8330 | 1.6 |
| MW-95M1 | N | 6/3/2010 | SW8330 | 1.4 |
| MW-95M1 | N | 11/19/2010 | SW8330 | 1.23 |
| MW-95M1 | N | 6/21/2011 | SW8330 | 1.54 |
| MW-95M1 | N | 11/28/2011 | SW8330 | 1.53 |
| MW-96M2 | N | 5/26/2000 | SW8330 | 0.4 |
| MW-96M2 | N | 9/28/2000 | SW8330 | 0.45 |
| MW-96M2 | N | 1/8/2001 | SW8330 | 0.41 J |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-96M2 | N | 10/2/2001 | SW8330 | 0.31 J |
| MW-96M2 | N | 11/29/2001 | SW8330 | 0.38 J |
| MW-96M2 | N | 5/23/2002 | SW8330 | 0.57 |
| MW-96M2 | N | 9/27/2002 | SW8330 | 0.69 |
| MW-96M2 | N | 2/3/2003 | SW8330 | 0.48 J |
| MW-96M2 | N | 3/31/2003 | SW8330 | 0.45 |
| MW-96M2 | FD | 3/31/2003 | SW8330 | 0.42 |
| MW-96M2 | N | 11/13/2003 | SW8330 | 0.38 |
| MW-96M2 | FD | 11/13/2003 | SW8330 | 0.38 |
| MW-96M2 | N | 1/23/2004 | SW8330 | 0.43 |
| MW-96M2 | N | 5/19/2004 | SW8330 | 0.33 |
| MW-96M2 | N | 8/24/2004 | SW8330 | 0.25 U |
| MW-96M2 | N | 1/10/2005 | SW8330 | 0.25 U |
| MW-96M2 | N | 5/9/2005 | SW8330 | 0.25 U |
| MW-96M2 | N | 8/24/2005 | SW8330 | 0.25 U |
| MW-96M2 | N | 12/9/2005 | SW8330 | 0.25 U |
| MW-96M2 | N | 4/25/2006 | SW8330 | 0.25 U |
| MW-96M2 | N | 5/7/2007 | SW8330 | 0.25 U |
| MW-96M2 | N | 5/19/2008 | SW8330 | 0.25 U |
| MW-96M2 | N | 6/2/2009 | SW8330 | 0.25 U |
| MW-96M2 | N | 6/14/2010 | SW8330 | 0.2 U |
| MW-96M2 | N | 5/31/2011 | SW8330 | 0.2 U |
| MW-97M2 | N | 5/25/2000 | SW8330 | 0.25 U |
| MW-97M2 | N | 9/27/2000 | SW8330 | 0.25 U |
| MW-97M2 | N | 1/3/2001 | SW8330 | 0.25 U |
| MW-97M2 | N | 10/15/2001 | SW8330 | 0.25 U |
| MW-97M2 | N | 12/15/2001 | SW8330 | 0.25 U |
| MW-97M2 | N | 5/23/2002 | SW8330 | 0.25 U |
| MW-97M2 | N | 8/16/2002 | SW8330 | 0.25 U |
| MW-97M2 | N | 2/3/2003 | SW8330 | 0.25 U |
| MW-97M2 | N | 4/16/2003 | SW8330 | 0.25 U |
| MW-97M2 | N | 11/19/2003 | SW8330 | 0.25 U |
| MW-97M2 | N | 1/20/2004 | SW8330 | 0.25 U |
| MW-97M2 | FD | 4/27/2004 | SW8330 | 0.25 U |
| MW-97M2 | N | 4/27/2004 | SW8330 | 0.25 U |
| MW-97M2 | N | 9/29/2004 | SW8330 | 0.25 U |
| MW-97M2 | N | 12/29/2004 | SW8330 | 0.25 U |
| MW-97M2 | N | 3/28/2005 | SW8330 | 0.25 U |
| MW-97M2 | N | 9/8/2005 | SW8330 | 0.25 U |
| MW-97M2 | N | 12/16/2005 | SW8330 | 0.25 U |
| MW-97M2 | N | 5/2/2006 | SW8330 | 0.25 U |
| MW-97M2 | N | 10/31/2006 | SW8330 | 0.25 U |
| MW-97M2 | FD | 10/31/2006 | SW8330 | 0.25 U |
| MW-97M2 | N | 5/7/2007 | SW8330 | 0.25 U |
| MW-97M2 | N | 11/19/2007 | SW8330 | 0.25 U |
| MW-97M2 | N | 5/19/2008 | SW8330 | 0.25 U |
| MW-97M2 | N | 12/10/2008 | SW8330 | 0.25 U |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-97M2 | N | 6/10/2009 | SW8330 | 0.25 U |
| MW-97M2 | N | 12/15/2009 | SW8330 | 0.25 U |
| MW-97M2 | N | 6/7/2010 | SW8330 | 0.2 U |
| MW-97M2 | N | 11/15/2010 | SW8330 | 0.2 U |
| MW-97M2 | N | 6/2/2011 | SW8330 | 0.2 U |
| MW-98M1 | N | 5/25/2000 | SW8330 | 2.1 |
| MW-98M1 | N | 9/29/2000 | SW8330 | 1.6 |
| MW-98M1 | N | 1/13/2001 | SW8330 | 1.4 |
| MW-98M1 | N | 10/24/2001 | SW8330 | 0.25 U |
| MW-98M1 | N | 11/28/2001 | SW8330 | 0.33 |
| MW-98M1 | N | 5/24/2002 | SW8330 | 0.52 J |
| MW-98M1 | FD | 5/24/2002 | SW8330 | 0.45 J |
| MW-98M1 | N | 9/26/2002 | SW8330 | 0.32 |
| MW-98M1 | N | 12/2/2002 | SW8330 | 0.39 |
| MW-98M1 | N | 4/9/2003 | SW8330 | 0.25 U |
| MW-98M1 | N | 11/12/2003 | SW8330 | 0.33 |
| MW-98M1 | N | 2/23/2004 | SW8330 | 0.42 |
| MW-98M1 | N | 5/6/2004 | SW8330 | 0.7 |
| MW-98M1 | N | 9/24/2004 | SW8330 | 0.44 |
| MW-98M1 | N | 11/9/2004 | SW8330 | 0.42 J |
| MW-98M1 | FD | 11/9/2004 | SW8330 | 0.4 J |
| MW-98M1 | N | 4/28/2005 | SW8330 | 1.2 |
| MW-98M1 | N | 8/18/2005 | SW8330 | 0.48 |
| MW-98M1 | N | 12/15/2005 | SW8330 | 0.32 |
| MW-98M1 | FD | 12/15/2005 | SW8330 | 0.32 J |
| MW-98M1 | N | 4/20/2006 | SW8330 | 0.33 |
| MW-98M1 | N | 5/10/2007 | SW8330 | 1.2 |
| MW-98M1 | N | 5/20/2008 | SW8330 | 0.81 |
| MW-98M1 | N | 6/25/2009 | SW8330 | 0.25 U |
| MW-98M1 | N | 5/27/2010 | SW8330 | 0.2 U |
| MW-98M1 | N | 6/15/2011 | SW8330 | 0.56 |
| MW-99S | FD | 5/25/2000 | SW8330 | 1.4 |
| MW-99S | N | 5/25/2000 | SW8330 | 1.4 |
| MW-99S | N | 9/29/2000 | SW8330 | 0.25 U |
| MW-99S | N | 1/13/2001 | SW8330 | 0.25 U |
| MW-99S | N | 10/23/2001 | SW8330 | 0.25 U |
| MW-99S | N | 11/29/2001 | SW8330 | 0.25 UJ |
| MW-99S | N | 5/23/2002 | SW8330 | 0.39 |
| MW-99S | N | 6/2/2003 | SW8330 | 0.25 U |
| MW-99S | N | 10/2/2003 | SW8330 | 0.25 U |
| MW-99S | N | 2/23/2004 | SW8330 | 0.25 U |
| MW-99S | N | 5/5/2004 | SW8330 | 0.25 U |
| MW-99S | N | 9/24/2004 | SW8330 | 0.25 U |
| MW-99S | N | 11/9/2004 | SW8330 | 0.25 U |
| MW-99S | N | 4/28/2005 | SW8330 | 0.25 U |
| MW-99S | N | 9/12/2005 | SW8330 | 0.25 U |
| MW-99S | N | 12/15/2005 | SW8330 | 0.25 U |

## Table A2
## Historic RDX Data for CIA MOnitoring Wells in 2011 Program

| Well Name | Sample Code | Sample Date | Analitical Method | Concentration (ug/L) |
|---|---|---|---|---|
| MW-99S | N | 4/20/2006 | SW8330 | 0.25 U |
| MW-99S | N | 5/18/2007 | SW8330 | 0.25 U |
| MW-99S | N | 5/20/2008 | SW8330 | 0.25 U |
| MW-99S | N | 6/25/2009 | SW8330 | 0.25 U |
| MW-99S | N | 5/27/2010 | SW8330 | 0.2 U |
| MW-99S | N | 6/14/2011 | SW8330 | 0.2 U |
| OW-2 | N | 11/14/2001 | SW8330 | 3 |
| OW-2 | N | 5/21/2002 | SW8330 | 8.2 |
| OW-2 | N | 8/30/2002 | SW8330 | 14 |
| OW-2 | N | 1/23/2003 | SW8330 | 8.6 |
| OW-2 | N | 11/13/2003 | SW8330 | 14 |
| OW-2 | N | 3/2/2004 | SW8330 | 16 |
| OW-2 | N | 9/28/2004 | SW8330 | 10 |
| OW-2 | N | 11/21/2005 | SW8330 | 4 |
| OW-2 | N | 11/16/2006 | SW8330 | 4.4 |
| OW-2 | FD | 11/16/2006 | SW8330 | 4.4 |
| OW-2 | FD | 5/23/2007 | SW8330 | 5 |
| OW-2 | N | 5/23/2007 | SW8330 | 5 |
| OW-2 | N | 11/30/2007 | SW8330 | 4.3 |
| OW-2 | N | 5/30/2008 | SW8330 | 4.3 |
| OW-2 | N | 11/13/2008 | SW8330 | 2.6 |
| OW-2 | N | 6/17/2009 | SW8330 | 1.1 |
| OW-2 | N | 12/16/2009 | SW8330 | 0.48 |
| OW-2 | N | 6/29/2010 | SW8330 | 0.2 U |
| OW-2 | N | 11/22/2010 | SW8330 | 0.24 |
| OW-2 | N | 6/10/2011 | SW8330 | 0.2 U |
| OW-2 | N | 11/18/2011 | SW8330 | 0.2 U |

N = normal field sample
U = not detected
J = estimated
ug/L = parts per billion

# Appendix B

# Recent CS-19 Reports

# [included on CD only]

| CH2MHILL | PROJECT NOTE | TASK ORDER 0337 |
|---|---|---|
| | | PROJECT NO. 437075 |
| **AFCEC**<br>**SPEIM/LTM**<br>**Otis ANG Base, Massachusetts**<br>**4P08 FA8903-08-D-8769** | **DOCUMENT CONTROL NUMBER:**<br>**437075-SPEIM-CS19-PRJNOT-001**<br>**CDRL B010** | PAGE 1 OF 2 |

| Confirmation Of: | Date Held: 28 November 2012 |
|---|---|
| ☒ Meeting | Location: IRP Conference Room |
| ☐ Change Notice | Date Issued: 11 December 2012 |
| ☐ General Project Note | Recorded By: Jason Dalrymple |
| Subject:<br>**CS-19 2012 ANNUAL LTM DATA PRESENTATION** | Issued By: Nigel Tindall |
| *EPA#: 24 – CHEMICAL SPILL-19* | CH2M HILL PROJECT MANAGER |

| ITEM | REMARKS |
|---|---|
| **1.0** | **INTRODUCTION**<br><br>This project note documents the Chemical Spill-19 (CS-19) 2012 Annual Long Term Monitoring (LTM) data presentation given at the 28 November 2012 Technical Update meeting. The data included the June 2012 annual groundwater sampling of six monitoring wells. The handouts for the data presentation included presentation text slides and two figures (Attachment A). |
| **2.0** | **BACKGROUND**<br><br>The CS-19 plume is located in the Impact Area, near the larger Central Impact Area (CIA) groundwater plume and study area (Figure 1 in Attachment A). The CIA plume is located upgradient, crossgradient, and beneath the CS-19 plume. The contaminant of concern (COC) for CS-19 is hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX). The CS-19 plume is defined as groundwater containing RDX concentrations above the U.S. Environmental Protection Agency (EPA) risk-based level of 0.6 micrograms per liter (µg/L). The final selected remedy for CS-19 presented in the Record of Decision (ROD) (AFCEE 2009a) was LTM with Land Use Controls (LUCs). |
| **3.0** | **RESULTS**<br><br>Analytical results were presented for selected monitoring wells in the CS-19 plume using concentration trend plots (Attachment A). A summary of the main findings is as follows:<br><br>RDX concentrations are generally consistent with past results. There was a notable decrease in RDX concentrations at MW-201M2 (from 9.15 µg/L in May 2011 to 0.85 µg/L in June 2012), and the RDX concentrations at MW-183M1 decreased below the EPA risk-based level of 0.6 µg/L (from 1.71 µg/L in May 2011 to a concentration below the reporting limit in June 2012). Based on a review of this annual data set and historical concentration trends, aquifer restoration is progressing as expected in comparison to modeling results presented in the ROD, which suggested a restoration timeframe of approximately 2037. |

Distribution: AFCEC: Rose Forbes, Jon Davis, Admin. Record, EPA: Bob Lim, MassDEP: Len Pinaud, Elliott Jacobs, CH2M HILL: Nigel Tindall, Jason Dalrymple, Doc. Control

| ITEM | REMARKS |
|---|---|
| **4.0** | **PLANS/RECOMMENDATIONS**<br>• The private well verification process for the CS-19 LUC program is underway, the results of which will be documented in a project note scheduled for submittal in January 2013.<br>• Perform the triennial sampling event in June 2013 via passive sampling methods where feasible and reassess the plume and LUC boundary based upon those results.<br>• Present sampling results at a fall 2013 Technical Update meeting. |
| **5.0** | **REGULATOR COMMENTS/ACTION ITEMS**<br>There were no comments from the regulatory agencies during the 28 November 2012 data presentation. |
| **6.0** | **REFERENCE**<br>AFCEE (Air Force Center for Engineering and the Environment). 2009a (September). *Final Chemical Spill-19 Record of Decision.* A4P-J23-05PC0829-M26-0005. Prepared by Jacobs Engineering Group Inc., for AFCEE/MMR, Installation Restoration Program, Otis Air National Guard Base, MA. |

Attachment:
Attachment A. CS-19 Data Presentation, 28 November 2012 Technical Update Meeting

# ATTACHMENT A

# CS-19 Data Presentation,
# 28 November 2012 Technical Update Meeting

# CS-19 Annual LTM Data Presentation

## 28 November 2012 Technical Update Meeting

## Overview

- Sampling Date: June 2012
- Annual Sampling Event:
  - Six CS-19 monitoring wells were sampled for RDX.
- Deviations: Could not obtain samples from Army wells (MW-183M1 and MW-201M2) with dedicated bladder pumps (have had difficulty in the past). Reporting results from Army sampling round in June 2012 (same laboratory and analytical requirements).
- Review Results shown on Figure 1
- Plans and Recommendations

# CS-19 Annual LTM Data Presentation

## 28 November 2012 Technical Update Meeting

Overview of Results:

- RDX concentrations at CS-19 are generally consistent with past results.
- Notable decrease at MW-201M2 from 9.15 μg/L (May 2011) to 0.85 μg/L (June 2012).
- RDX concentration at MW-183M1 decreased below 0.6 μg/L.
- Aquifer restoration is progressing as expected in comparison to the modeling results presented in the ROD (restoration timeframe ~2037).

Plans and Recommendations:

- No plume boundary or LUC area changes required at this time (Figure 2).
- Private well verification process for CS-19 LUC underway; project note will be submitted in January 2013.
- Perform triennial monitoring event in June 2013 via passive sampling methods where feasible; reassess plume and LUC boundary.
- Present sampling results at a fall 2013 Technical Update meeting.

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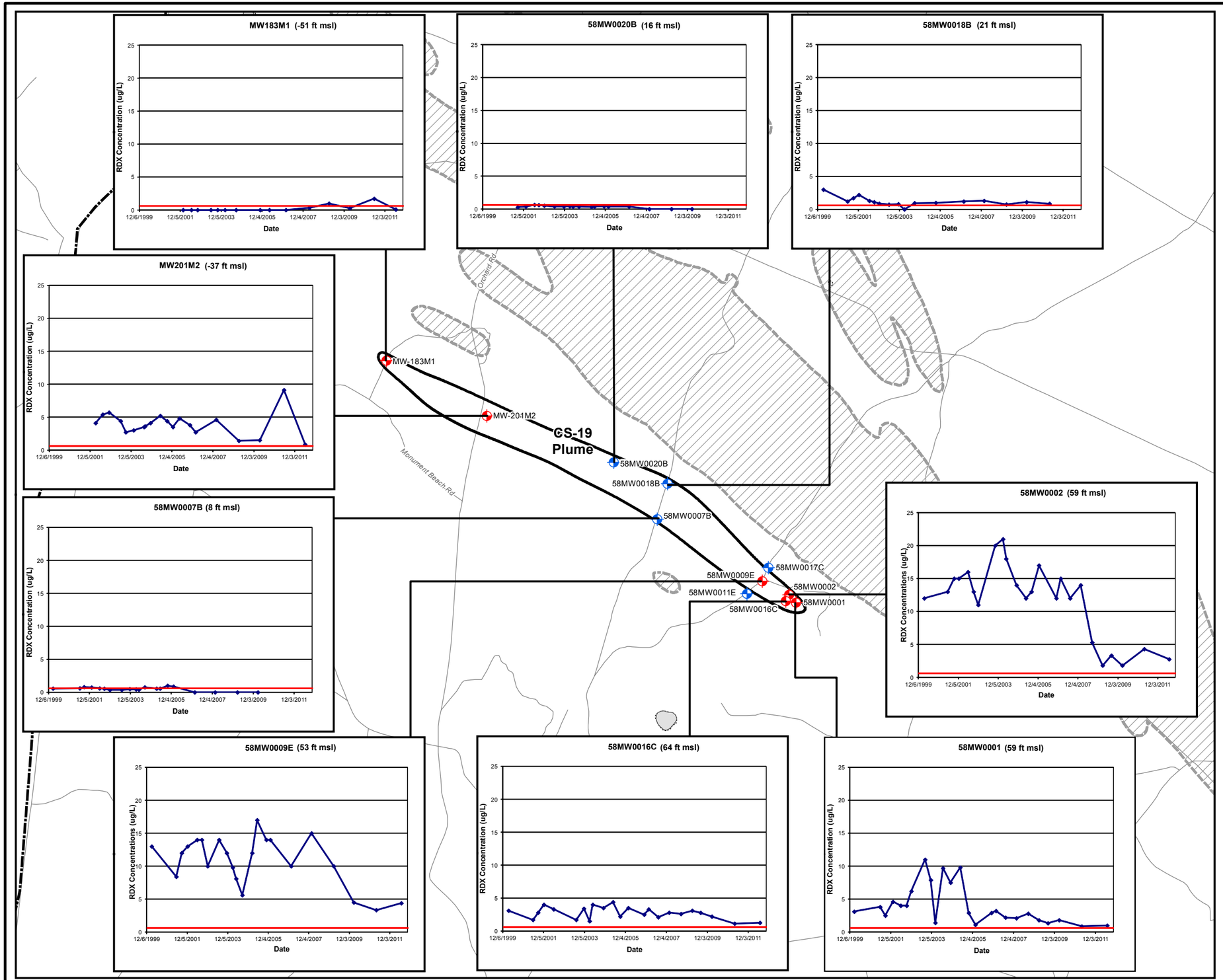


## Legend

- CS-19 Monitoring Well
- Massachusetts Military Reservation Boundary
- 2011 CS-19 Plume Boundary
- Central Impact Area RDX and Perchlorate Plume
- EPA Risk-based Level (0.6 µg/L)
- RDX Data
- ft msl — Feet Mean Sea Level

**Monitoring Network Sampling Frequency:**

- Annual
- Triennial

N

0 740 1,480 Feet

Data Source: AFCEC, November 2012, MMR-AFCEC Data Warehouse
Impact Area Plume provided by IAGWSP, July 2011

# FIGURE 1

## RDX CONCENTRATION TRENDS IN SELECT CS-19 MONITORING WELLS

AFCEC - Massachusetts Military Reservation

*28 November 2012 Technical Update Meeting*

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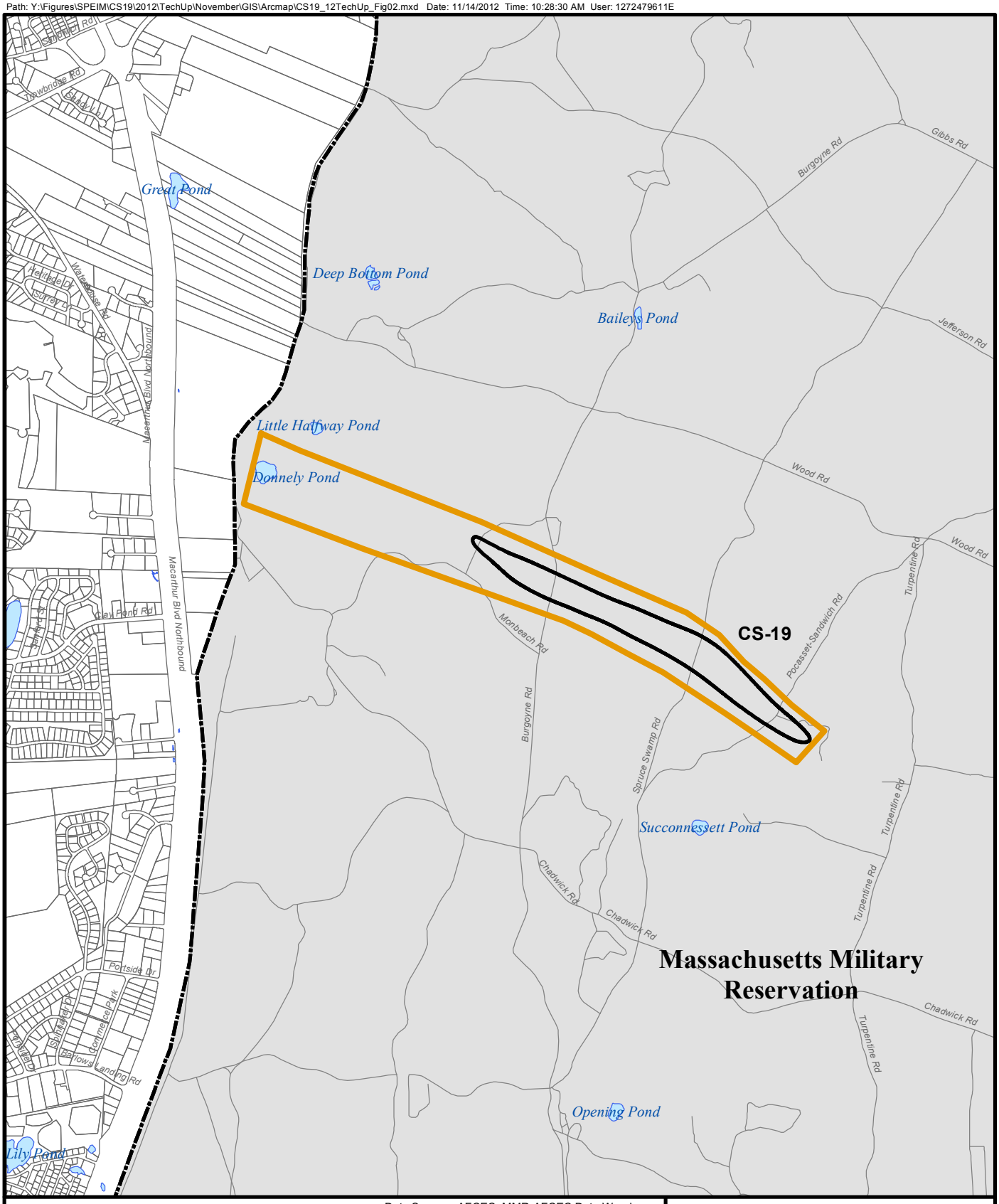
Path: Y:\Figures\SPEIM\CS19\2012\TechUp\November\GIS\Arcmap\CS19_12TechUp_Fig02.mxd Date: 11/14/2012 Time: 10:28:30 AM User: 1272479611E




Data Source: AFCEC, MMR-AFCEC Data Warehouse
MMR Boundary from Massachusetts Air National Guard 2011

Legend

- Massachusetts Military Reservation Boundary
- Plume Boundary
- Land Use Control Boundary

N

0 1,100 2,200
Feet

**FIGURE 2**

**CS-19 LAND USE CONTROL**

AFCEC - Massachusetts Military Reservation

*28 November 2012 Technical Update Meeting*

CH2MHILL

# Massachusetts Military Reservation


## *Chemical Spill-19 Groundwater Plume Conceptual Site Model*

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Prepared for:
AFCEC/MMR
Installation Restoration Program
322 E. Inner Road
Otis ANGB, MA 02542

Prepared by:
CH2M HILL
1748 West Truck Road
Otis ANGB, MA 02542

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## ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AFCEC[1] | Air Force Civil Engineer Center |
| AFCEE[1] | Air Force Center for Engineering and the Environment |
| BBM | Buzzards Bay Moraine |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CIA | Central Impact Area |
| COC | contaminant of concern |
| CS | Chemical Spill |
| DNX | hexahydro-1,3-dinitroso-5-nitro-1,3,5-triazine |
| EPA | U.S. Environmental Protection Agency |
| ESD | Explanation of Significant Differences |
| FFA | Federal Facility Agreement |
| FS | Feasibility Study |
| ft | foot or feet |
| ft/day | feet per day |
| IAGWSP | Impact Area Groundwater Study Program |
| IRP | Installation Restoration Program |
| LTM | Long Term Monitoring |
| LUC | Land Use Control |
| MassDEP | Massachusetts Department of Environmental Protection |
| MEC | munitions and explosives of concern |
| MMR | Massachusetts Military Reservation |
| MNA | monitored natural attenuation |

[1]In October 2012, the Air Force Center for Engineering and the Environment (AFCEE) adopted a new organizational name, the Air Force Civil Engineer Center (AFCEC). Therefore, the AFCEE and AFCEC acronyms refer to the same entity, but are used in this document in relation to the date of the specific topic/document in question.

## ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| MNX | hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine |
| MPP | Mashpee Pitted Plain |
| msl | mean sea level |
| MW | megawatt |
| RAO | remedial action objective |
| RDX | hexahydro-1,3,5-trinitro-1,3,5-triazine |
| RI | Remedial Investigation |
| ROD | Record of Decision |
| SPEIM | System Performance and Ecological Impact Monitoring |
| TNX | hexahydro-1,3,5-trinitroso-1,3,5-triazine |
| USAF | United States Air Force |
| VI | vapor intrusion |
| µg/L | micrograms per liter |

## 1.0 LOCATION

The Massachusetts Military Reservation (MMR) is located on western Cape Cod in Barnstable County, Massachusetts, approximately 60 miles south of Boston. The MMR property includes land in the towns of Bourne, Falmouth, Mashpee, and Sandwich, Massachusetts. The Chemical Spill–19 (CS-19) groundwater plume is located in the west central region of the MMR Impact Area in Bourne, Massachusetts (Figure 1). The Impact Area is located in the northern portion of the MMR and has been used primarily for military training. The primary source for the CS-19 groundwater plume is historical disposal of ordnance at the CS-19 source area.

The CS-19 plume is located near the larger Central Impact Area (CIA) groundwater plume and study area (Figure 2). The CIA plume is located upgradient, crossgradient, and beneath the CS-19 plume. The Army is currently managing the CIA source area and groundwater under the Impact Area Groundwater Study Program (IAGWSP).

## 2.0 GENERAL DESCRIPTION

The CS-19 groundwater plume is a dilute dissolved-phase groundwater plume. The CS-19 plume boundary is defined as the extent of groundwater containing the contaminant of concern (COC), hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX), at concentrations exceeding its U.S. Environmental Protection Agency (EPA) risk-based level of 0.6 micrograms per liter (µg/L). Based on the most recent groundwater monitoring data collected in 2012, the CS-19 plume is approximately 6,800 feet (ft) long, has a maximum width of approximately 600 ft, and is up to 30 ft thick in the aquifer. The footprint of the CS-19 plume occupies approximately 64 acres.

The CS-19 site is presently inactive for military purposes, although the land use of the Impact Area is still considered military and is designated as an operational range (Figure 1). The land over the CS-19 plume is primarily forested, and the CS-19 site is within a restricted area surrounded by fencing and guarded gates. The eastern portion of the CS-19 plume is located within the Mashpee Pitted Plain (MPP), which is

characterized as a broad, flat, gently sloping glacial outwash plain. The western portion of the plume travels into the Buzzards Bay Moraine (BBM) (Figure 3), which is a hummocky north-south trending ridge of moraine glacial deposits. Within the footprint of the plume, the maximum and minimum ground surface elevations are 258 ft mean sea level (msl), and 180 ft msl, respectively. The topography of the land within the CS-19 area is shown on Figure 4.

The climate at the MMR is categorized as humid continental, modified by Cape Cod's proximity to the Atlantic Ocean. Prevailing winds are from the northwest in the winter and the southwest in the summer. Precipitation is fairly evenly distributed throughout the year; average annual rainfall is approximately 48 inches. Temperature extremes are mitigated by the influence of the Atlantic Ocean, producing milder winters and cooler summers than those experienced in inland areas of Massachusetts.

## 3.0 RELEVANT GEOLOGY AND HYDROGEOLOGY

### 3.1 Geology

The unconsolidated overburden sediment beneath MMR and adjacent areas was deposited during late-stage Pleistocene glaciation. The majority of the MMR and the areas to the south between the MMR boundary and Vineyard Sound lie within the broad glacial outwash plain referred to as the MPP. The MPP is comprised of poorly graded, medium to coarse-grained sand with well-graded gravel, and occasional local, discontinuous lenses of fine-grained silty sands, silts, and clays. Underlying the MPP in most areas are silty glaciolacustrine sediments and basal till, although in some areas coarse-grained MPP deposits directly overlie bedrock. The BBM (Figure 3) is composed of finer, more poorly sorted material than the MPP. In general, this sequence of glacial deposits that comprise the overburden ranges in thickness from 70 ft near the Cape Cod Canal, which is located near the northwest corner of MMR, to approximately 300 ft below the MMR, to more than 400 ft along Vineyard Sound located approximately 6 miles to the south. The total thickness of unconsolidated deposits in the CS-19 plume

area ranges from 330 to 410 ft. The bedrock surface forms the bottom of the aquifer, and has been identified as a granite or gneiss in the area of the CS-19 plume.

### 3.2 Hydrogeology/Hydrology

The single groundwater flow system that underlies western Cape Cod, including the CS-19 area, is known as the Sagamore Lens. This sole-source aquifer is primarily unconfined and is recharged by infiltration of precipitation at a rate of approximately 30 inches per year (AFCEE 2006). Overall the aquifer is considered homogenous and isotropic; locally, however, heterogeneous and anisotropic conditions occur. Groundwater flow paths dip gradually, as indicated by gradually deepening contaminant plumes, into the aquifer instead of following a strictly horizontal flow path. This is attributed to accretion of recharge from precipitation at the aquifer surface rather than density differences between uncontaminated water and water containing dissolved chemicals. There are no surface water bodies in the vicinity of the CS-19 plume. The closest surface water body to the CS-19 plume is Succonnessett Pond, located approximately 2,000 ft south of CS-19.

The CS-19 groundwater elevation contours indicate that groundwater flow in the CS-19 area is to the northwest (**Figure 5**). Flow within the aquifer is predominantly horizontal, with an average horizontal component of hydraulic gradient of 0.0012 ft per ft in the vicinity of the CS-19 plume (AFCEE 2003). The depth to groundwater in the vicinity of the CS-19 plume ranges from approximately 120 ft below ground surface to approximately 200 ft below ground surface; the elevation of the water table within the CS-19 area ranges from approximately 65 ft msl in the southeast to approximately 55 ft msl in the northwest (**Figure 5**). Water table elevations typically fluctuate from 1 to 4 ft per year in the area of the CS-19 plume.

The saturated aquifer thickness varies from approximately 190 to 210 ft in the CS-19 area; the bedrock surface forms the bottom of the aquifer (**Figures 6** and **7**). The CS-19 groundwater plume is overlain by a lens of uncontaminated groundwater that is up to 100 ft thick. Aquifer materials consist primarily of medium- and coarse-grained sands.

However, low hydraulic conductivity silts and high hydraulic conductivity gravels do exist in the aquifer; therefore the range of hydraulic conductivity values is from 1 to 280 feet per day (ft/day) in the CS-19 area. Using a porosity of 0.39 and the average horizontal hydraulic gradients within the CS-19 area, the average linear groundwater velocities is generally less than 1 ft/day (AFCEE 2003).

## 4.0 HISTORY

### 4.1 Release/Source History

The CS-19 source area was used historically for ordnance disposal, which resulted in explosives contamination in site soil and groundwater. The site was initially defined as approximately one acre in size, as outlined by a perimeter road with an approximate 125-ft radius (Figure 2). A later interpretation of geophysical and chemical data collected during the source area soil removal action, along with visual assessment of site debris, indicated that the CS-19 perimeter road was an artificial boundary and did not reflect the extent of disposal activities at the site. The boundary of the CS-19 disposal area was extended outward beyond the perimeter road in all directions to include an additional 1.1 acres known as the CS-19 expansion area (AFCEE 2009b).

The CS-19 Bunker Area was identified because of a large magnetic anomaly detected during an aerial survey, and due to the information identified in a witness interview summary (IAGWSP 2003) (Figure 2). According to the witness, the area around the bunker was known as Range 11 and was used by contractors for ordnance testing in the 1950s through the 1960s. The area was also used by the Army and National Guard for ordnance detonation. The testing operations were moved to the J-1 Range sometime in the 1960s because it was too difficult to make arrangements to use Range 11 due to the Army and National Guard artillery training (AFCEE 2008c).

### 4.2 Investigation History/Initial Responses/Primary Documents

The CS-19 source area was identified as a potential disposal site and has been studied since 1991, including a series of literature reviews, and several field investigations that

were completed and documented in the CS-19 Remedial Investigation (RI) report. The baseline human health risk assessment conducted during the CS-19 RI indicated there was no current risk but that a potential future risk to human health existed through exposure to contaminated groundwater (AFCEE 2003).

The following initial responses were conducted.

**Non-Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Actions:**

Investigation activities conducted in the CS-19 Bunker Area indicated the presence of munitions related to training activities (AFCEE 2008c). The conclusions from the Bunker Area Investigation were that no additional monitoring or action was warranted at that time. However, it was recommended that the results of the Bunker Area Investigation be evaluated during the development of the response actions for the CIA plume to ensure that the response actions taken for the Bunker Area are consistent with those taken for CIA. If further actions are needed at the CS-19 Bunker Area, they will be carried out by the IAGWSP (AFCEE 2011c).

**CERCLA Actions:**

CS-19 Source Area: Removal activities conducted at the CS-19 source area between 2004 and 2006, and between 2007 and 2009 included the excavation of the top 2 to 3 ft of soil and the associated munitions and explosives of concern (MEC). Based on confirmatory sampling, the EPA and the Massachusetts Department of Environmental Protection (MassDEP) agreed that the remaining RDX levels in soil are protective and that any leaching to groundwater would be well below risk-based levels (AFCEE 2009a).

CS-19 Groundwater Plume: The 2003 CS-19 RI (AFCEE 2003) concluded that active cleanup of the CS-19 plume was not necessary since the plume will attenuate naturally if the source is removed. The Air Force Center for Engineering and the Environment (AFCEE) agreed to remove the source of the CS-19 plume, and an interim remedy of

long term monitoring (LTM) was selected for the CS-19 plume in 2005 (AFCEE 2005). It was agreed that a final remedy would be evaluated in conjunction with the remedy selection process for the nearby CIA plume (EPA 2004). In 2008, AFCEE, EPA, and MassDEP agreed that the CS-19 and CIA plume remedy selection process could be conducted separately.

The CS-19 Feasibility Study (FS) was completed in 2009 (AFCEE 2009d) and included detailed analysis of three alternatives: (1) No remedial action; (2) Monitored Natural Attenuation (MNA) with Land Use Controls (LUCs); (3) Groundwater extraction, treatment with a mobile treatment unit, and infiltration, LTM and LUCs. A Proposed Plan was released to the public in April 2009 (AFCEE 2009c) to solicit comments on AFCEE's preferred alternative (Alternative 2). The selected remedy for CS-19 as specified in the Record of Decision (ROD) was Alternative 2: MNA with LUCs (AFCEE 2009a).

An Explanation of Significant Differences (ESD) was submitted for the Installation Restoration Program (IRP) groundwater plumes in September 2011 that slightly modified the phrasing of the remedial action objectives (RAOs), and updated the steps to achieve site closure (i.e., the three-step process) (AFCEE 2011a). A detailed description of the existing remedy is provided in Section 9.

The primary documents associated with the remedial actions conducted at CS-19 are as follows:

- *Final Chemical Spill-19 Remedial Investigation Report* (AFCEE 2003)
- *Final Chemical Spill-19 Groundwater Plume Interim Record of Decision* (AFCEE 2005)
- *Final Chemical Spill-19 Bunker Area Investigation Report* (AFCEE 2008c)
- *Final 3rd Five-Year Review, 2002-2007 Massachusetts Military Reservation (MMR) Superfund Site, Otis Air National Guard Base, MA (*AFCEE 2008a)
- *Final Chemical Spill-19 Feasibility Study* (AFCEE 2009d)
- *Proposed Plan for the Chemical Spill-19 Groundwater* (AFCEE 2009c)
- *Final CS-19 Soil Removal Action Report* (AFCEE 2009b)
- *Final Chemical Spill-19 Groundwater Record of Decision* (AFCEE 2009a)

- *Final Chemical Spill-19 Bunker Area Phase II Investigation Report* (AFCEE 2011c)
- *Final Explanation of Significant Differences for the Installation Restoration Program Groundwater Plumes at the Massachusetts Military Reservation* (AFCEE 2011a)
- *Final 2011 MMR Vapor Intrusion Evaluation Technical Memorandum* (AFCEE 2012a)

### 4.3 Regulatory Framework

The remedial actions at CS-19 are being conducted in accordance with the CERCLA of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, and to the extent practicable, the National Contingency Plan. The MMR is listed on the National Priorities List as Otis Air National Guard/Camp Edwards in Falmouth, Massachusetts. The Comprehensive Environmental Response, Compensation, and Liability Information System number for the MMR site is MA2570024487.

The U.S. Department of Defense (U.S. Air Force [USAF]) is the lead agency for CERCLA remedial actions at the MMR. The EPA, USAF, and National Guard Bureau are parties to the Federal Facility Agreement (FFA) (EPA et al. 2002) for the MMR. The Air Force Civil Engineer Center (AFCEC) is managing the CS-19 site under the IRP. The MassDEP is not a signatory of the FFA, but is an active participant in the clean-up process and provides guidance and direction to the process through several chartered boards and committees.

The selected remedy for the CS-19 plume is MNA with LUCs. A groundwater monitoring program is currently underway at CS-19 to verify the natural attenuation of the groundwater plume. Plume monitoring is conducted under the MMR System Performance and Ecological Impact Monitoring (SPEIM)/LTM program. Guidance and procedures for data collection, analysis, and review under the SPEIM/LTM program are included in the Quality Assurance Project Plan (AFCEE 2012b). The SPEIM/LTM program was developed to monitor plume changes through monitoring of selected media (i.e., groundwater, surface water) within and outside the plume boundaries. Through the SPEIM/LTM program, plume monitoring is continuously evaluated and optimized to reduce costs.

## 5.0 NATURE AND EXTENT OF CONTAMINANTS

### 5.1 List of Contaminants of Concern

The COC for the CS-19 plume is RDX in groundwater. The RDX EPA risk-based level is 0.6 µg/L.

### 5.2 Current Extent and Distribution of Contamination

#### 5.2.1 Source Area

The CS-19 source area is located within the Impact Area, which occupies most of the northern portion of the MMR and has been used primarily for military training (Figures 1 and 2). The CS-19 source area is a historical ordnance disposal site. Removal activities conducted at the CS-19 source area between 2004 and 2006, and between 2007 and 2009 included the excavation of the top 2 to 3 ft of soil and the associated MEC. Based on confirmatory sampling, the EPA and the MassDEP agreed that the remaining RDX levels in soil are protective and that any leaching to groundwater would be well below risk-based levels (AFCEE 2009a). RDX concentrations have decreased in groundwater samples collected from monitoring wells located in the source area, but are currently still above the EPA risk-based level of 0.6 µg/L; RDX concentrations are expected to decrease below the risk-based level in the next ten years.

#### 5.2.2 Plume

The general dimensions of the CS-19 groundwater plume using data collected in 2012 are provided in Section 2.0; more detailed information is included in this section. The line of cross-section used to illustrate the vertical distribution of selected constituents at CS-19 is presented on Figure 6 (cross-section line A-A'), and a representative cross-sectional view of the CS-19 plume based on RDX data collected through 2011 is provided in Figure 7. Concentration trend graphs for key monitoring wells located throughout the CS-19 plume are provided as Figure 8. Figure 8 illustrates that RDX concentrations have decreased at most locations. The maximum historical concentration of RDX in CS-19 groundwater is 21 µg/L collected from source area monitoring well location 58MW0002 in March 2004.

As mentioned in Section 3.2 groundwater flow at CS-19 is to the northwest, as reflected in the shape of the CS-19 plume boundary (Figure 5). Flow within the aquifer is predominantly horizontal. A comparison of the 1998, 2000, 2002, and 2011 CS-19 plume boundaries is provided on Figures 9 and 10. A conceptual site model depiction of the CS-19 plume is shown on Figure 11, and illustrates in general terms the location of the CS-19 plume in the aquifer in relation to the nearby CIA plume.

### 5.2.3 Surface Water

There are no surface water bodies in the immediate vicinity of the CS-19 plume. The closest surface water body to the CS-19 plume is Succonnessett Pond, located approximately 2,000 ft south of CS-19.

## 6.0 SITE-SPECIFIC FATE AND TRANSPORT

Contaminants originating in source areas on MMR have migrated through the vadose zone and reached the water table. After chemicals were introduced into the groundwater system, the more mobile dissolved contaminants, RDX in the case of CS-19, migrated through the subsurface in the direction of groundwater flow.

### 6.1 Transport Mechanisms

The physicochemical mechanisms governing the migration of contaminants in the subsurface at MMR include advection, volatilization, dilution, dispersion, diffusion, and sorption. Given the long, thin plume depiction for CS-19, advection may be the predominant physicochemical contaminant transport mechanisms occurring in the CS-19 plume. Since the majority of CS-19 plume is overlain by a thickness of "clean" groundwater, the potential for volatilization being a significant factor over most of CS-19 is very low (AFCEE 2012a). However, residual RDX concentrations are present at the water table below and near the CS-19 source area. Although a clean water lens does not exist below the CS-19 source area, no buildings or preferential airflow pathways are located in this area and future site development is controlled by on-base entities. Therefore, the vapor intrusion (VI) exposure pathway at CS-19 is considered insignificant due to the absence of nearby receptors (AFCEE 2012a). The solubility of RDX is low,

but RDX can be relatively mobile once in the aqueous environment. Organic carbon concentrations within the aquifer are relatively low. This, combined with the low organic-carbon partitioning coefficient for RDX, suggest that sorption may not be playing a significant role at CS-19 resulting in relatively low retardation coefficients.

### 6.2 Transformation Mechanisms (Including Potential for Natural Attenuation)

RDX has been reported to be resistant to biodegradation under aerobic conditions (Walsh 1990, Hoffsommer et al. 1978, and Spanggord et al. 1980). However, RDX degradation can be significant under anaerobic conditions when extra organic nutrients are supplied (Soli 1973, McCormick et al. 1981 and 1984). Byproducts include methanol, formaldehyde, hydrazine and the nitroso-reduction products of RDX [hexahydro-1-nitroso-3,5-dinitro-1,3,5-triazine (MNX), hexahydro-1,3-dinitroso-5-nitro-1,3,5-triazine (DNX), and hexahydro-1,3,5-trinitroso-1,3,5-triazine (TNX)] (Walsh 1990, McCormick et al. 1981). RDX may anaerobically transform in soils, groundwater and stagnant surface water, but the rate of biotransformation is unknown (Walsh 1990).

Sampling for the RDX breakdown products was performed at MassDEP's request in 2010 and 2011 at CS-19, but has since been discontinued (AFCEE 2012c). The RDX breakdown product MNX was detected at estimated concentrations below the laboratory reporting limit in most monitoring wells where RDX was detected, while DNX and TNX were not detected. Based on data collected over the long history of sampling at CS-19, the aquifer is highly oxygenated and aerobic (i.e., there are only sporadic measurements of low dissolved oxygen). The low detections of MNX at CS-19 suggest a small degree of biodegradation may have occurred or is occurring somewhere along the RDX migration pathway. However, given that the MNX concentrations are low and within an aerobic aquifer, anaerobic biodegradation is an insignificant process at CS-19. The physical processes of attenuation (dispersion, dilution, sorption) play a more significant role in the attenuation of RDX in this aquifer than biodegradation.

## 7.0 POTENTIAL EXPOSURE SCENARIOS

### 7.1 Review of Land Use

The area above the CS-19 plume is presently inactive for military purposes, although the land use of the Impact Area is still considered military and is designated as an operational range. The area is primarily forested and is within a restricted area surrounded by fencing and guards. It is anticipated that the land use above the extent of the CS-19 plume will not change significantly over time.

As part of the LUC process specified in the 2011 ESD for the IRP groundwater plumes (AFCEE 2011a), AFCEC has initiated a private well verification evaluation for the CS-19 plume to determine whether a complete exposure pathway to the plume contaminants exists through the use of water supply wells. Although the formal well verification document has not been produced, there are no water supply wells in the CS-19 area.

### 7.2 Potential Receptors

#### 7.2.1 Human

The human health risk assessment conducted as part of the RI (AFCEE 2003) identified potential receptors as future residents of properties above the RDX plume.

#### 7.2.2 Ecological

An ecological baseline risk assessment was not conducted for groundwater because the CS-19 plume is not currently discharging to any surface water bodies, nor is it expected to in the future. The ecological baseline risk assessment conducted for surface soil indicated that the primary ecological hazard to the target terrestrial species (i.e., vesper sparrow and white-footed mouse) was the presence of trinitrotoluene and its degradation products in soil (AFCEE 2003).

### 7.3 Potentially Complete Exposure Pathways

The exposure pathways considered in the human health and ecological risk assessments presented in the ROD are summarized on Figures 12 and 13, respectively. The VI exposure pathway at CS-19 is considered insignificant due to the absence of nearby receptors (AFCEE 2012a). However, as part of the ongoing LTM program at CS-19, AFCEC will continue to monitor the extent and attenuation of the CS-19 plume under the SPEIM/LTM program and will re-evaluate the VI exposure pathway if conditions change such that VI could be a concern.

## 8.0 REMEDIAL ACTION OBJECTIVES

The following RAOs were developed for the CS-19 groundwater plume (AFCEE 2009a, 2011a):

- Prevent residential exposure to CS-19 groundwater with RDX concentrations greater than the EPA risk-based level of 0.6 µg/L.
- Restore useable groundwaters to their beneficial uses wherever practicable, within a time frame that is reasonable given the particular circumstances of the site.

The remedial alternatives were developed to satisfy these RAOs. A description of the selected remedy is included in the following section.

## 9.0 DESCRIPTION OF EXISTING REMEDY

### 9.1 General Approach and Remedial Technology

The selected remedy for CS-19 groundwater in the ROD (AFCEE 2009a) was MNA with LUCs and plume monitoring. Since the remedy was selected in 2009, the following changes have occurred: The 2011 ESD for the IRP groundwater plumes (AFCEE 2011a) slightly modified the phrasing of the RAOs, and added text regarding the MMR three-step process to achieve site closure.

The MMR three-step process to achieve site closure includes:

1) monitoring the plume in accordance with the approved monitoring plan,
2) conducting a risk assessment to determine if unacceptable risks were posed by residual contamination and to determine if additional measures will be pursued to achieve acceptable risks, and
3) once acceptable risks have been achieved, evaluating the technical and economic feasibility of restoring the aquifer to background conditions.

### 9.2 Monitoring Objectives/Performance Metrics

The expected aquifer restoration timeframe (when RDX concentrations are predicted by the groundwater model to drop below the EPA risk-based level throughout the plume) presented in the ROD is 2037 (AFCEE 2009a).

### 9.3 Monitoring Optimization

The data collected under the SPEIM program are used to optimize the monitoring programs. The monitoring network optimizations that have been completed at CS-19 are as follows:

- 2007 – optimized monitoring network
- 2010 – optimized monitoring network
- 2012 – introduced no purge sampling technique (HydraSleeve® samplers) at CS-19

### 9.4 Sustainability

In a world that is resource limited and increasingly aware of activities that could impact global climate, there is growing emphasis on designing and maintaining more sustainable, low-impact engineering solutions. This emphasis on sustainability extends to the remediation of soil and groundwater. AFCEC is committed to a more complete evaluation of sustainability metrics when considering and comparing the total impacts, benefits, and life-cycle costs of environmental remediation alternatives including optimization evaluations.

Similarly, the EPA is committed to developing and promoting innovative cleanup strategies that restore contaminated sites to productive use, reduce costs, and promote environmental stewardship, while ensuring that cleanups are protective of human health and the environment. In accordance with EPA's strategic plan for compliance and environmental stewardship, the Agency strives for cleanup programs that use natural resources and energy efficiently, reduce negative impacts on the environment, minimize pollution at its source, and reduce waste to the greatest extent possible.

AFCEC and EPA support the adoption of green remediation as the practice of considering all environmental effects of cleanup actions and incorporating strategies to maximize the net environmental benefit.

Green remediation results in effective cleanups minimizing the environmental and energy "footprints" of site remediation and reuse. Green practices emphasize the need to more closely evaluate core elements of a cleanup project:

- Energy requirements of the treatment system,
- Air emissions,
- Water requirements and associated impacts on water resources,
- Impacts on land and ecosystems,
- Material consumption and waste generation, and
- Long term stewardship actions.

Since 2003, AFCEE has incorporated the sustainability considerations listed above into the SPEIM/LTM/Operations and Maintenance program at MMR. Examples of sustainability initiatives implemented at MMR (not specific to CS-19 only) include:

- Increasing use of green power through installation of a 1.5-megawatt (MW), on-site wind turbine in 2009.
- Construction of two additional 1.5-MW wind turbines in 2011 resulting in the AFCEC groundwater cleanup program being powered by 100% renewable energy.
- Switching to power suppliers that purchase renewable energy certificates and provide green power.

- Conducting energy audits and implementing energy conservation measures such as efficient lighting, occupancy sensors, and programmable thermostats; and enrollment in a demand response program.
- Installing variable frequency drives which can eliminate booster pumps and downsize pump motors.
- Using AFCEC-owned and self-performed direct push drilling technology to reduce costs and waste generation and minimize impacts on the environment and community.
- Increasing use of biofuels and environmentally sensitive hydraulic oil in fleet vehicles.
- Improving the trophic health of a pond by using an innovative zero-valent iron geochemical barrier that passively removes phosphorus discharging into the pond.
- Reusing treated water for irrigation.
- Using passive/no-purge sampling techniques rather than techniques that require pumps, resulting in energy savings and less waste generation.
- Assessment of alternative granular activated products with a goal to reduce overall program costs and/or provide for a more sustainable treatment approach.

In addition, the third MMR five-year review recommended adoption of a strategy that more fully encompasses all environmental effects of cleanup actions (to a reasonable degree) when evaluating groundwater system operations and optimizations in order to more holistically address protectiveness (AFCEE 2008a). AFCEE developed a sustainability assessment tool that was presented as an appendix in the *Final Supplement to the Chemical Spill-10 Groundwater Feasibility Study Addendum* (AFCEE 2008b). This tool should be built upon and improved and used as a template for integrating sustainability into remediation decisions at the MMR. EPA encourages green remediation practices but EPA has not endorsed or concurred with AFCEE's sustainability assessment tool or its use in CERCLA decision making. Further details of the optimization and sustainability initiatives implemented by AFCEC at MMR are available upon request.

## 10.0 EXPECTED REMEDY PERFORMANCE AND STRATEGY

### 10.1 Expected Remedy Performance

Groundwater transport modeling results presented in the ROD indicate that RDX concentrations will drop below the EPA risk-based level throughout the plume via natural attenuation by approximately 2037 (AFCEE 2009a).

### 10.2 Plume Management Strategy

Short-term and long-term plume management strategies are presented below. In addition to these plume specific management strategies, AFCEE developed a program-wide exit strategy framework with the stakeholder group that is documented in the *Response Completion Plan for the Massachusetts Military Reservation* (AFCEE 2010). This exit strategy framework will be used to determine the "road to closure" for each MMR groundwater plume.

#### 10.2.1 Short Term

- Continue to monitor the natural attenuation of the CS-19 plume.
- Optimize the groundwater monitoring network as appropriate.
- Complete the LUC well verification program.

#### 10.2.2 Long Term

- Monitor the natural attenuation of the CS-19 plume.
- Complete three-step process to achieve site closure.

## 11.0 UNCERTAINTY

The primary uncertainties associated with the characterization of the CS-19 plume and the ongoing activities are as follows:

- In some instances there is a relatively large spacing between monitoring locations (over 1,800 ft apart in some instances) in the CS-19 plume. This paucity of data points can lead to uncertainties in determining the nature and extent of the CS-19 plume. Uncertainty in the plume characterization can lead to significant uncertainty in transport-model based aquifer restoration timeframes predictions.

- Although unlikely at CS-19, the potential exists that contaminant mass is stored in low permeability aquifer materials and through the process of matrix diffusion these zones are acting as secondary, long-term sources of groundwater contamination. Because the contaminant mass release is controlled by diffusion processes which act at a slow rate, this matrix diffusion process may lengthen the predicted restoration timeframe estimates. A matrix diffusion evaluation completed for the CS-10 plume at MMR did not conclusively determine whether this matrix diffusion process was playing a significant role (AFCEE 2011b and 2011d). However, there is potential that secondary sources exist and these are not directly considered in the current transport modeling approach.

## 12.0 PROBLEM STATEMENT

Dissolved-phase RDX is present in groundwater in a sole-source aquifer at concentrations above the EPA risk-based level. MNA will be conducted at CS-19 to achieve the site RAOs defined in the ROD and ESD (see Section 8.0). When the EPA risk-based level has been reached, the three-step process will be initiated to achieve site closure. When there is stakeholder consensus that the RAOs have been met, "Response Complete" status will have been reached.

## 13.0 REVISIONS AND UPDATES

A summary of the updates and revisions to this Conceptual Site Model is documented in **Attachment 1**.

## 14.0 REFERENCES


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# FIGURES

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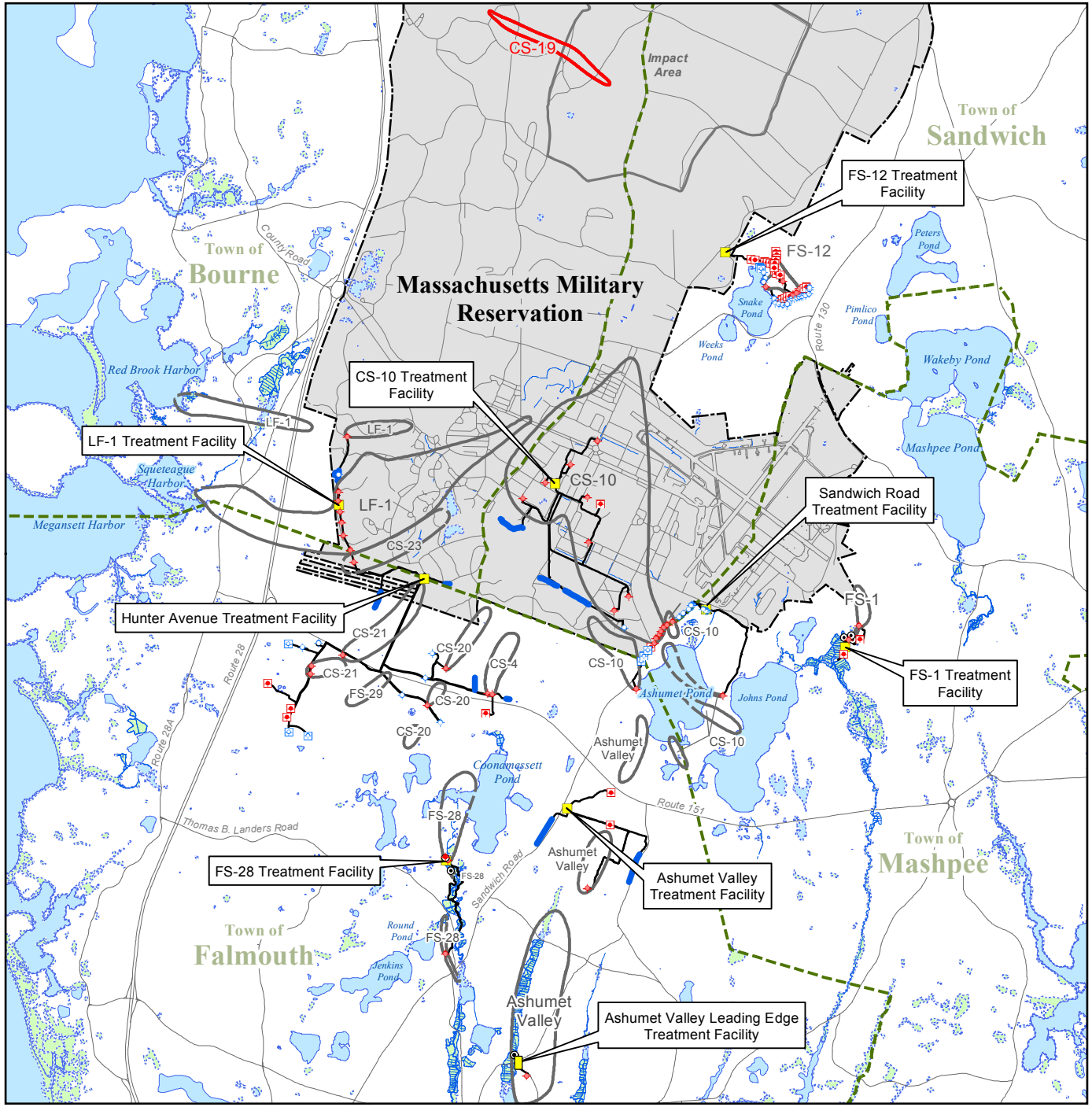


**Legend**

- CS-19 Plume Boundary (Dashed Where Inferred)
- Other IRP Plume Boundary (Dashed Where Inferred)
- Infiltration Trench/Gallery
- Town Boundary
- Treatment System Pipeline
- Bog/Wetland
- Reinjection Well
- Extraction Well (On)
- Extraction Well (Off)
- Reinjection Well (Off)
- Treatment Facility
- Outflow Bubbler

N

0 0.5 1 Miles

Data Source: AFCEC, January 2013, MMR-AFCEC Data Warehouse, MMR Boundary from Massachusetts Air National Guard 2011

# FIGURE 1

## IRP PLUMES AND TREATMENT SYSTEMS, JANUARY 2013

AFCEC - Massachusetts Military Reservation

*Conceptual Site Model*

CH2MHILL

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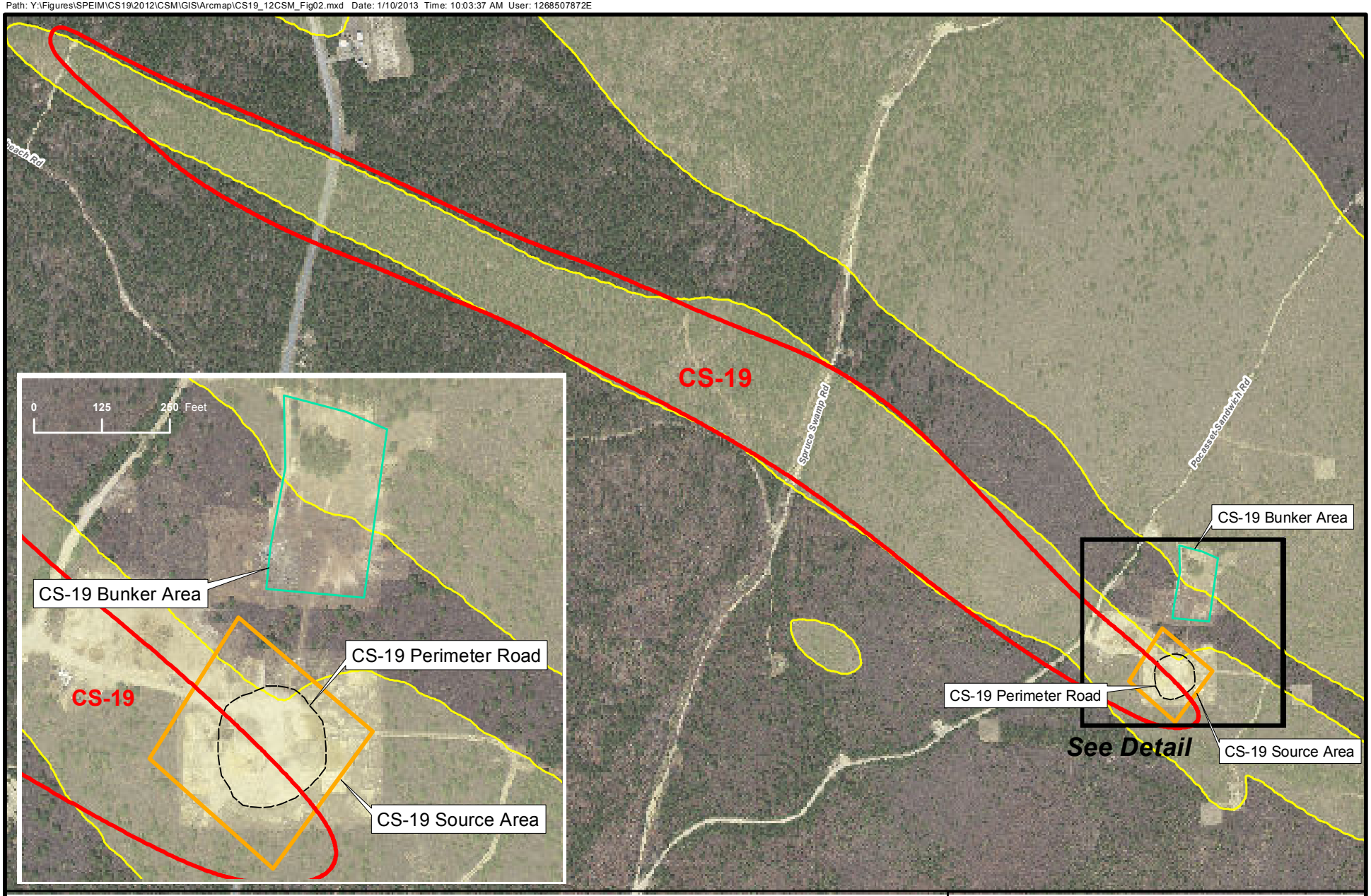


## Legend

- CS-19 Plume Boundary = Concentrations exceeding the hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) EPA risk based level of 0.6 µg/L
- Central Impact Area RDX and Perchlorate Plume
- Source Area

Data Source: AFCEC, January 2013, AFCEC-MMR Data Warehouse
2009 Aerial Photography from MassGIS;
Impact Area Plume Data from the Impact Area Groundwater Study Program, July 2011

N

0 350 700 Feet

**FIGURE 2**

**CHEMICAL SPILL-19 (CS-19)**
**JANUARY 2013**
AFCEC - Massachusetts Military Reservation
*Conceptual Site Model*

CH2MHILL

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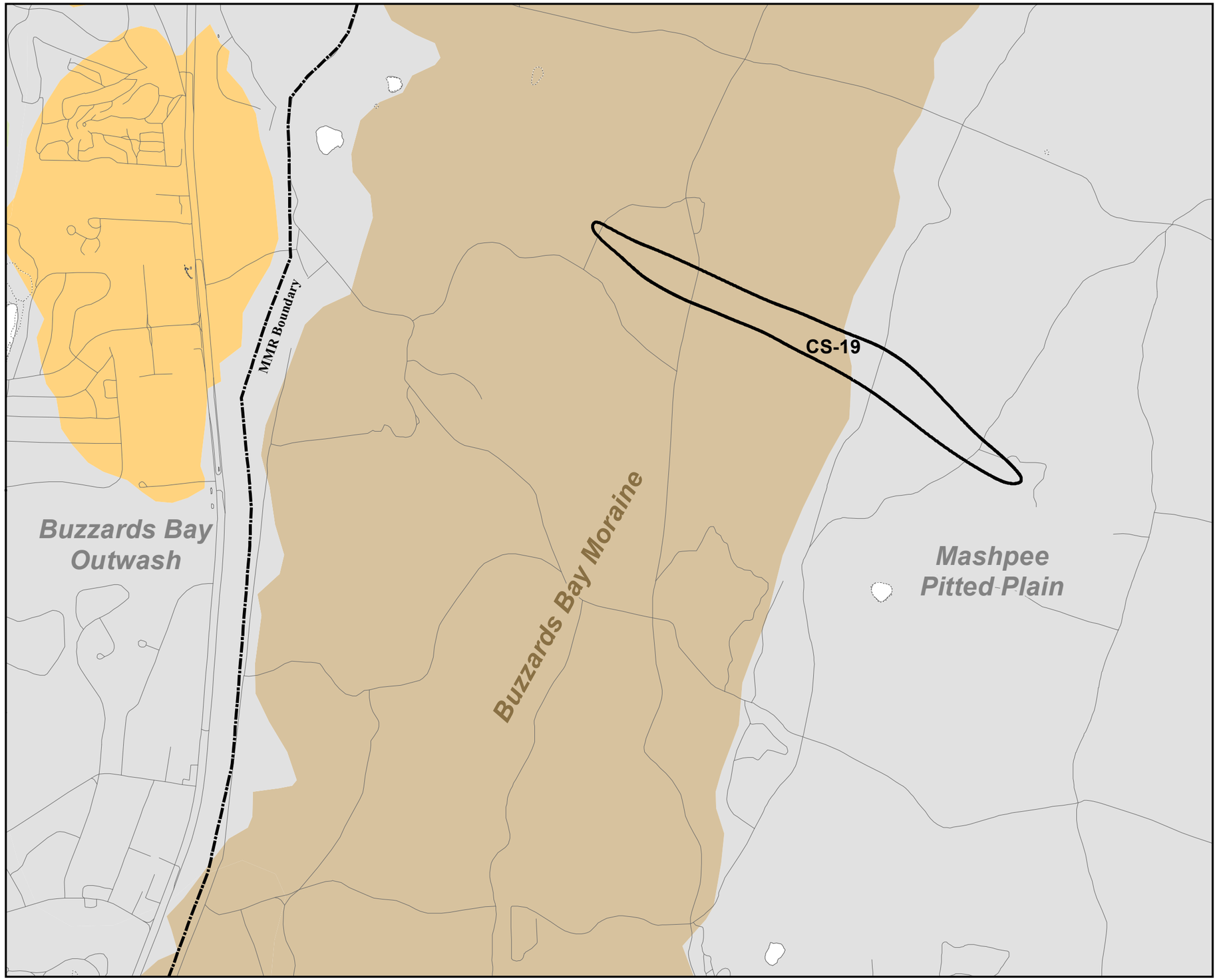


Legend

- Massachusetts Military Reservation Boundary
- CS-19 Plume Boundary

**Surficial Geology**

- End Moraine
- Sand and Gravel Deposits
- Sandy Till over Sand

N

0 660 1,320

Feet

Data Source: AFCEC, January 2013, MMR-AFCEC Data Warehouse
USGS surficial geology provided by MassGIS; MMR Boundary from Massachusetts Air National Guard 2011

**FIGURE 3**

**SURFICIAL GEOLOGIC MAP FOR THE CS-19 AREA**

AFCEC - Massachusetts Military Reservation

*Conceptual Site Model*

CH2MHILL®

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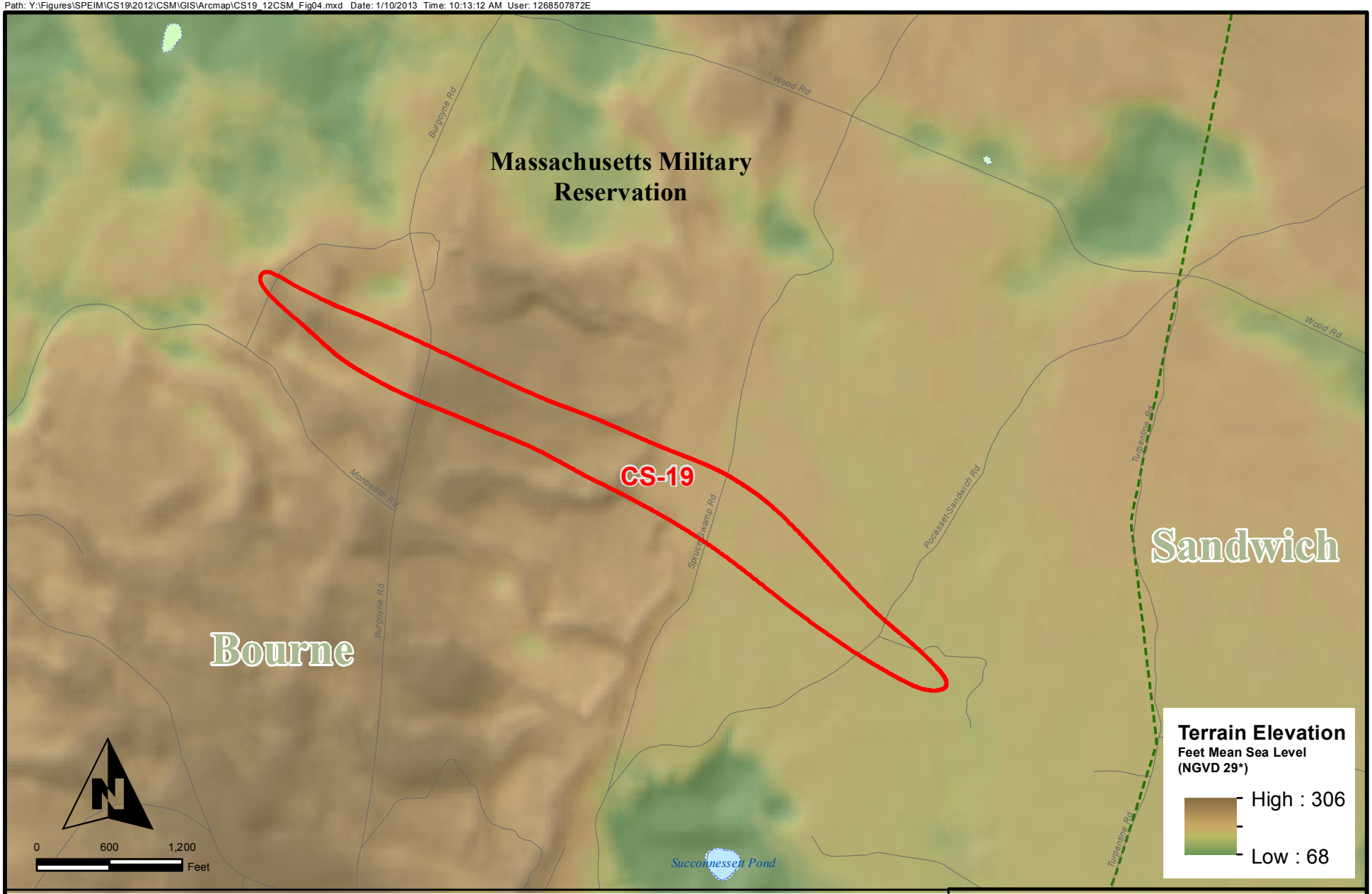


Legend

- CS-19 Plume Boundary = Concentrations exceeding the hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) EPA risk based level of 0.6 µg/L
- Town Boundary
- Bog/Wetland

Data Source: AFCEC, January 2013, AFCEC-MMR Data Warehouse

*NGVD 29 = National Geodetic Vertical Datum 1929

**FIGURE 4**

**CS-19 PLUME AREA TOPOGRAPHY**

AFCEC - Massachusetts Military Reservation

*Conceptual Site Model*

CH2MHILL

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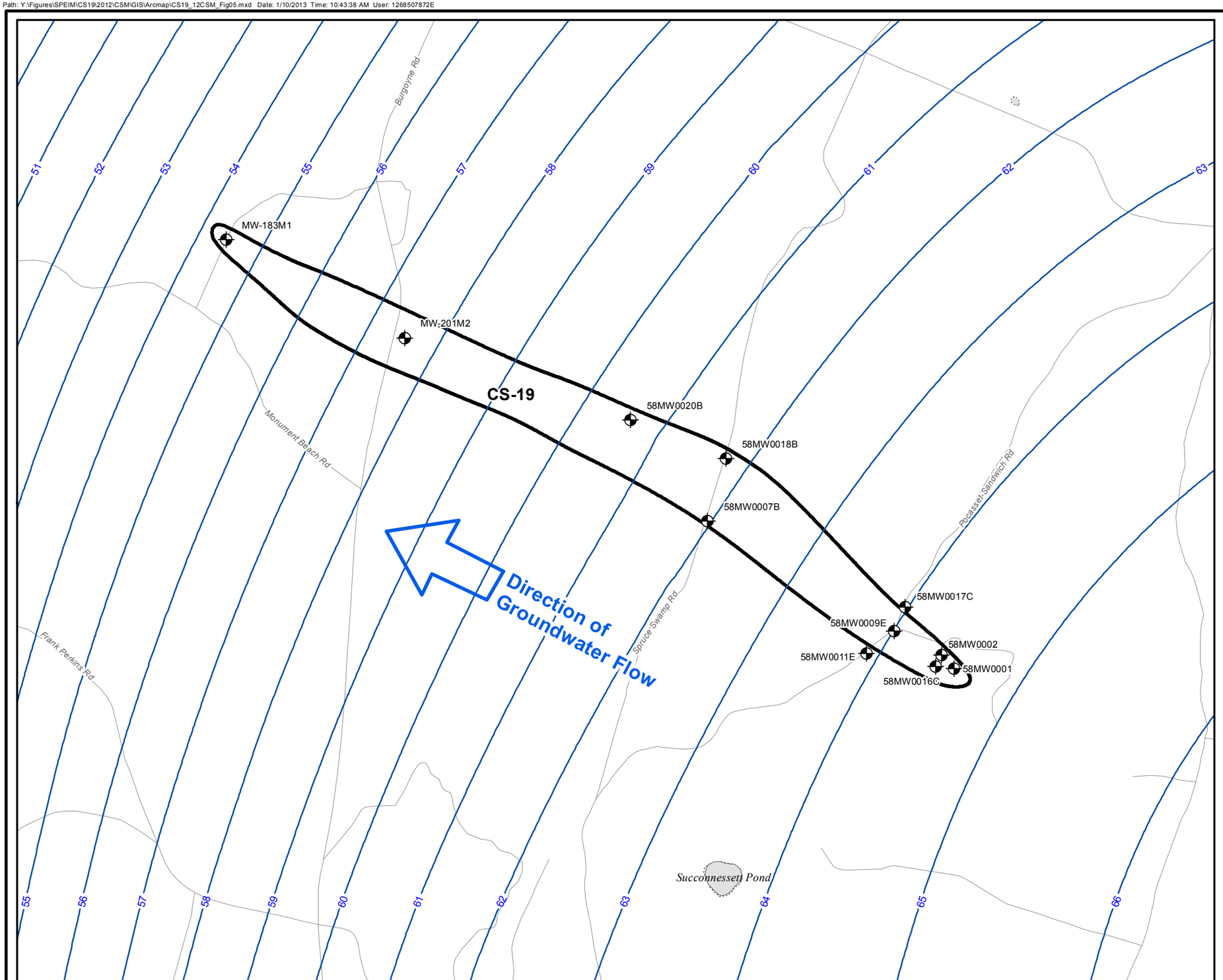


## Legend

- CS-19 Monitoring Well
- Massachusetts Military Reservation Boundary
- CS-19 Plume Boundary
- CS-19 Model-Predicted Layer 1 Head Contours, 1 Foot Interval (feet msl)
- Bog/Wetland

N

0 390 780
Feet

Data Source: AFCEC, January 2013, MMR-AFCEC Data Warehouse
Groundwater Contours from Jacobs Engineering, Final CS-19 Groundwater Feasibility Study, April 2009

**FIGURE 5**

**CS-19 MODEL-PREDICTED GROUNDWATER CONTOUR MAP**

AFCEC - Massachusetts Military Reservation
*Conceptual Site Model*

CH2MHILL®

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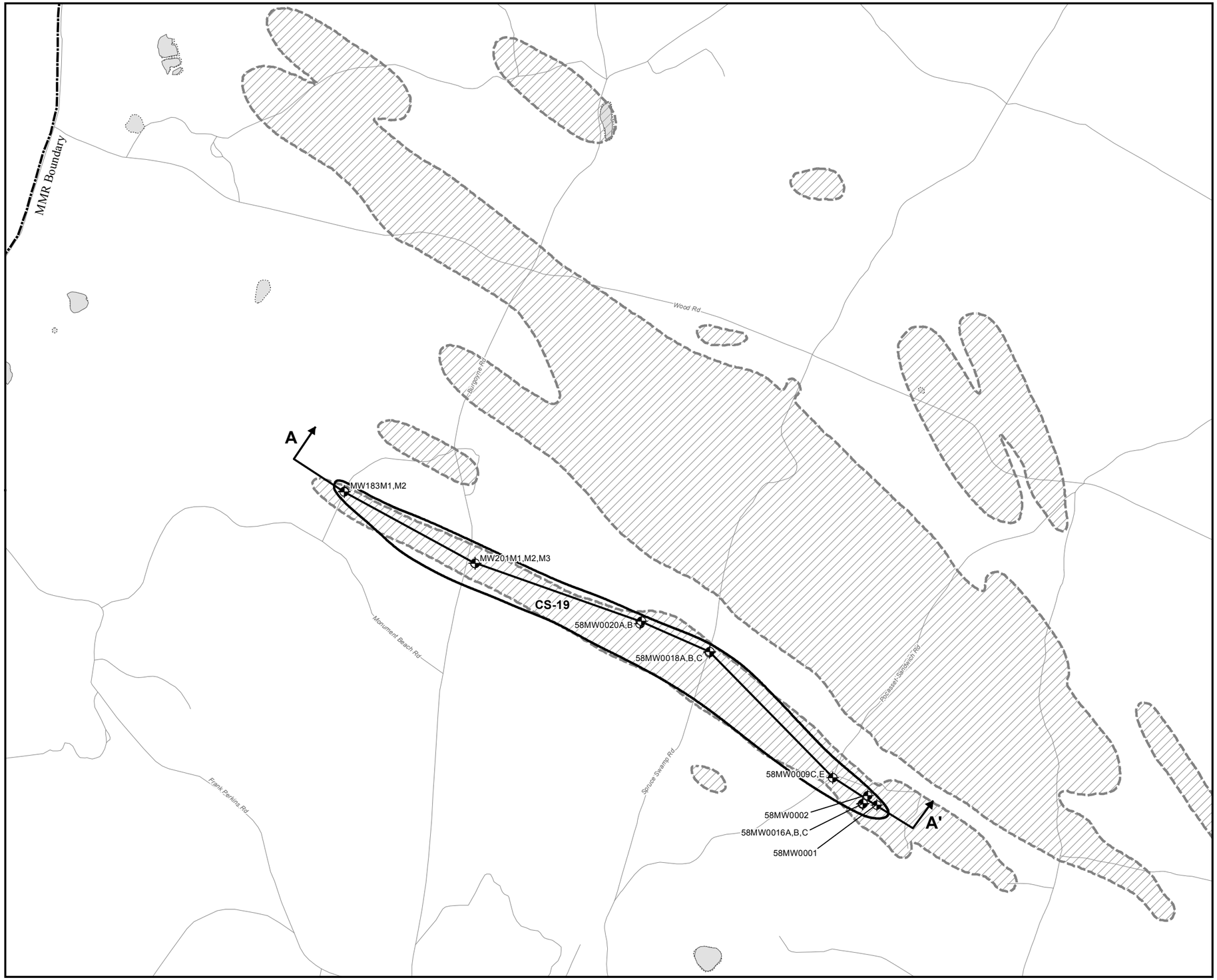


## Legend

- Monitoring Well
- Massachusetts Military Reservation Boundary
- CS-19 Plume Boundary
- Central Impact Area RDX Plume
- Bog/Wetland

N

0 530 1,060 Feet

Data Source: AFCEC, January 2013, MMR-AFCEC Data Warehouse
MMR Boundary from Massachusetts Air National Guard 2011
Impact Area Plume provided by E&RC 10 May 2011

**FIGURE 6**

**CS-19 LINE OF CROSS-SECTION**

AFCEC - Massachusetts Military Reservation

*Conceptual Site Model*

CH2MHILL®

Northwest
A

Southeast
A'

Elevation (Feet Mean Sea Level)

MW183M1,M2
MW201M1,M2,M3
58MW0020A,B
58MW0018A,B,C
58MW0009C,E
58MW0016A,B,C
58MW0002
58MW0001

ND (2009) M2
1.71 M1
M3 ND (2005)
M2 9.12
M1 ND (2005)
ND (2010) B
ND (2010) A
ND (2005) A
0.56 B
ND (2005) A
C ND (2000)
3.34 E
ND (2006) C
1.13 C
0.86
4.3
ND (2006) B
ND (2010) A
0.6
0.6

Legend

- Monitoring Well
- Water Table
- A — Well Screen ID
- CS-19 Plume Boundary
- 3.5 — RDX Data (µg/L) Collected in 2011 Unless Otherwise Noted
- (2001) ND — RDX Vertical Profile Data (µg/L) (Date Collected)
- ND — Not Detected
- Silty Sand
- Silty Clay
- Bedrock

Data Source: AFCEC, January 2013, AFCEC-MMR Data Warehouse and EDMS (Army Database)

V: 60
H: 750
0 Feet

**FIGURE 7**

**CS-19 RDX CROSS-SECTION A-A'**

AFCEC - Massachusetts Military Reservation
*Conceptual Site Model*

CH2MHILL

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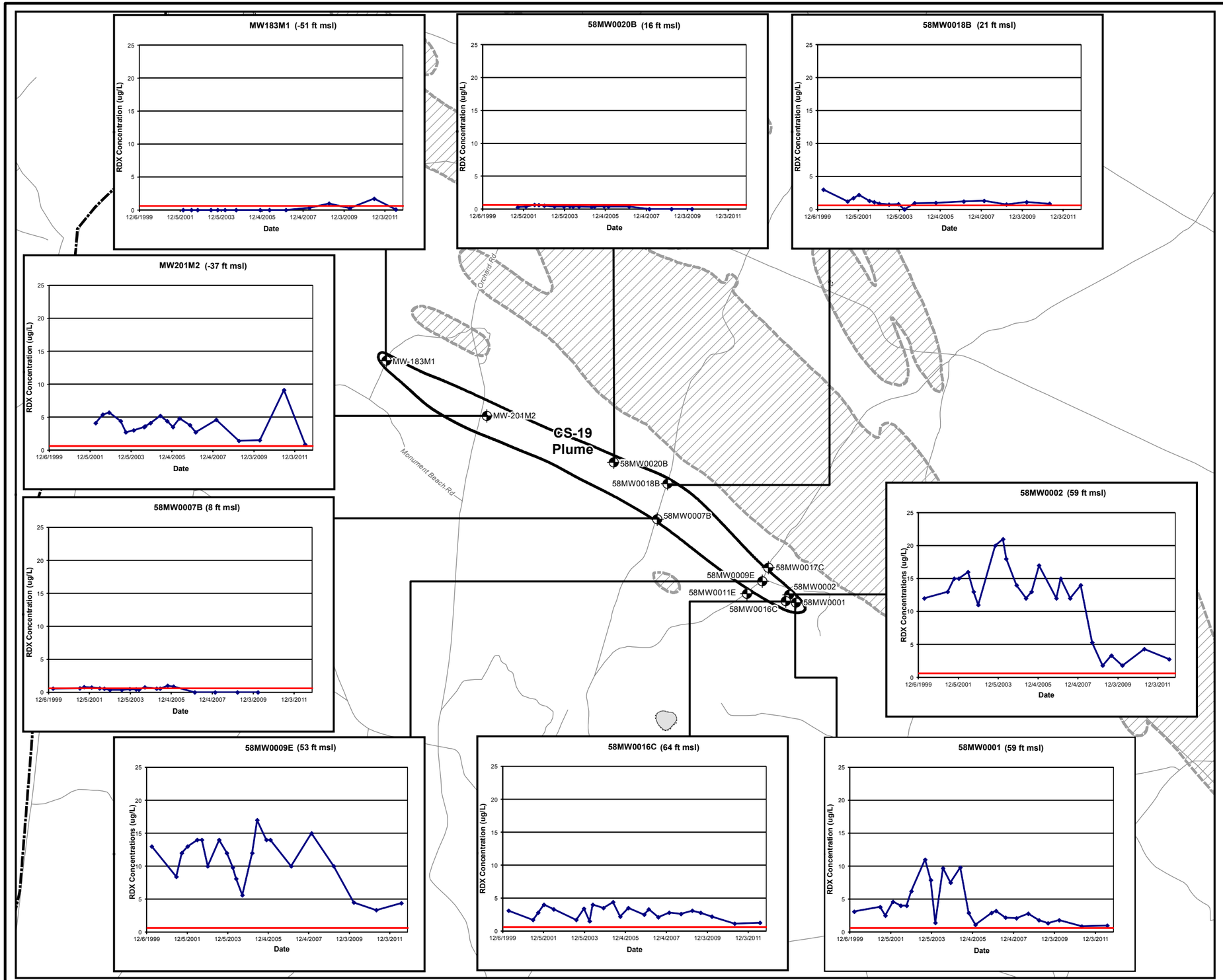



## Legend

- CS-19 Monitoring Well
- Massachusetts Military Reservation Boundary
- 2011 CS-19 Plume Boundary
- Central Impact Area RDX and Perchlorate Plume
- EPA Risk-based Level (0.6 µg/L)
- RDX Data
- ft msl — Feet Mean Sea Level

N

0 740 1,480 Feet

Data Source: AFCEC, January 2013, MMR-AFCEC Data Warehouse
Impact Area Plume provided by IAGWSP, July 2011

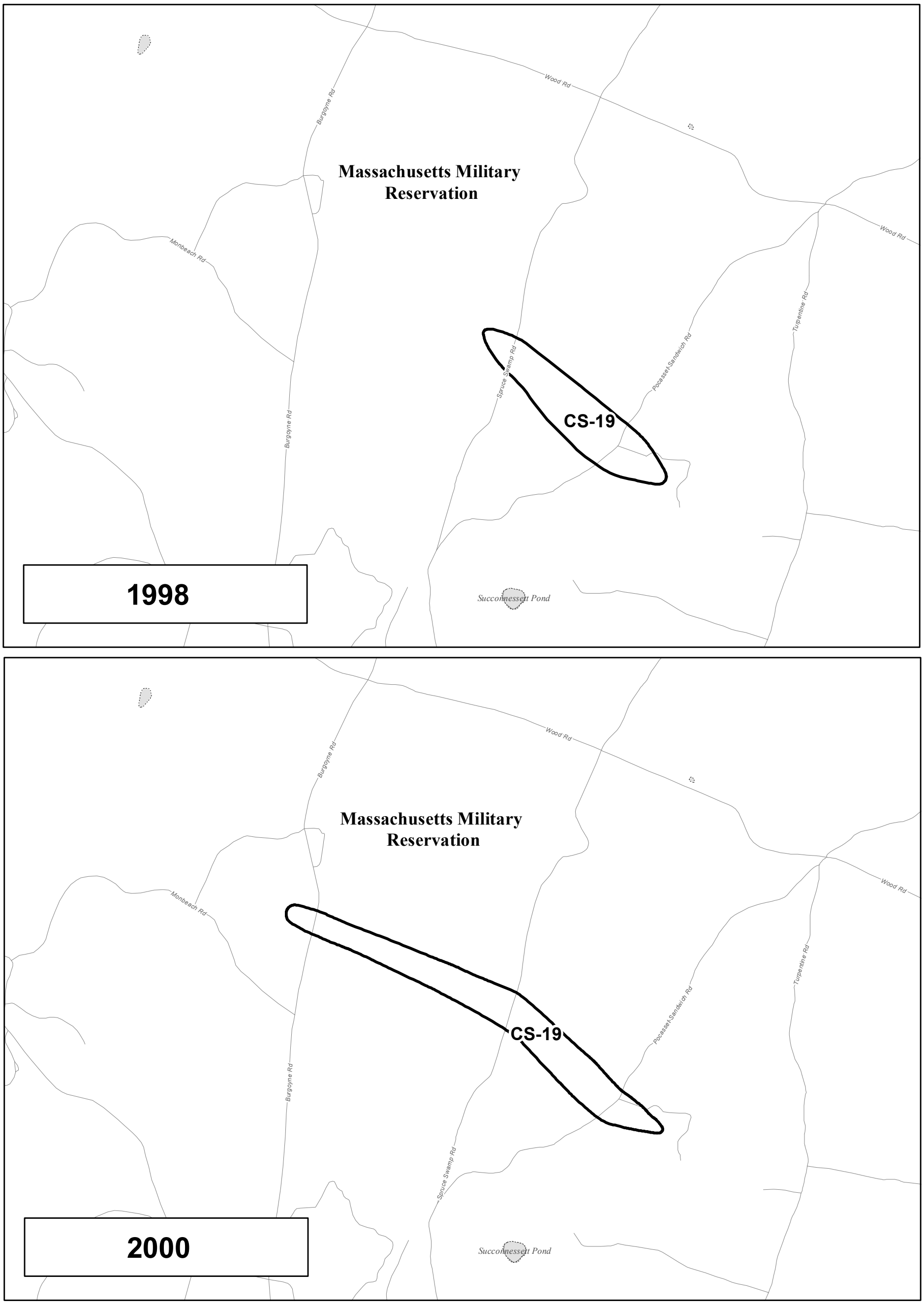
**FIGURE 8**

**CS-19 RDX CONCENTRATION TRENDS AT SELECT MONITORING WELLS**

AFCEC - Massachusetts Military Reservation

*Conceptual Site Model*

CH2MHILL




Data Source: AFCEC, January 2013, MMR-AFCEC Data Warehouse

Legend

CS-19 Plume Boundary

N

0 590 1,180

Feet

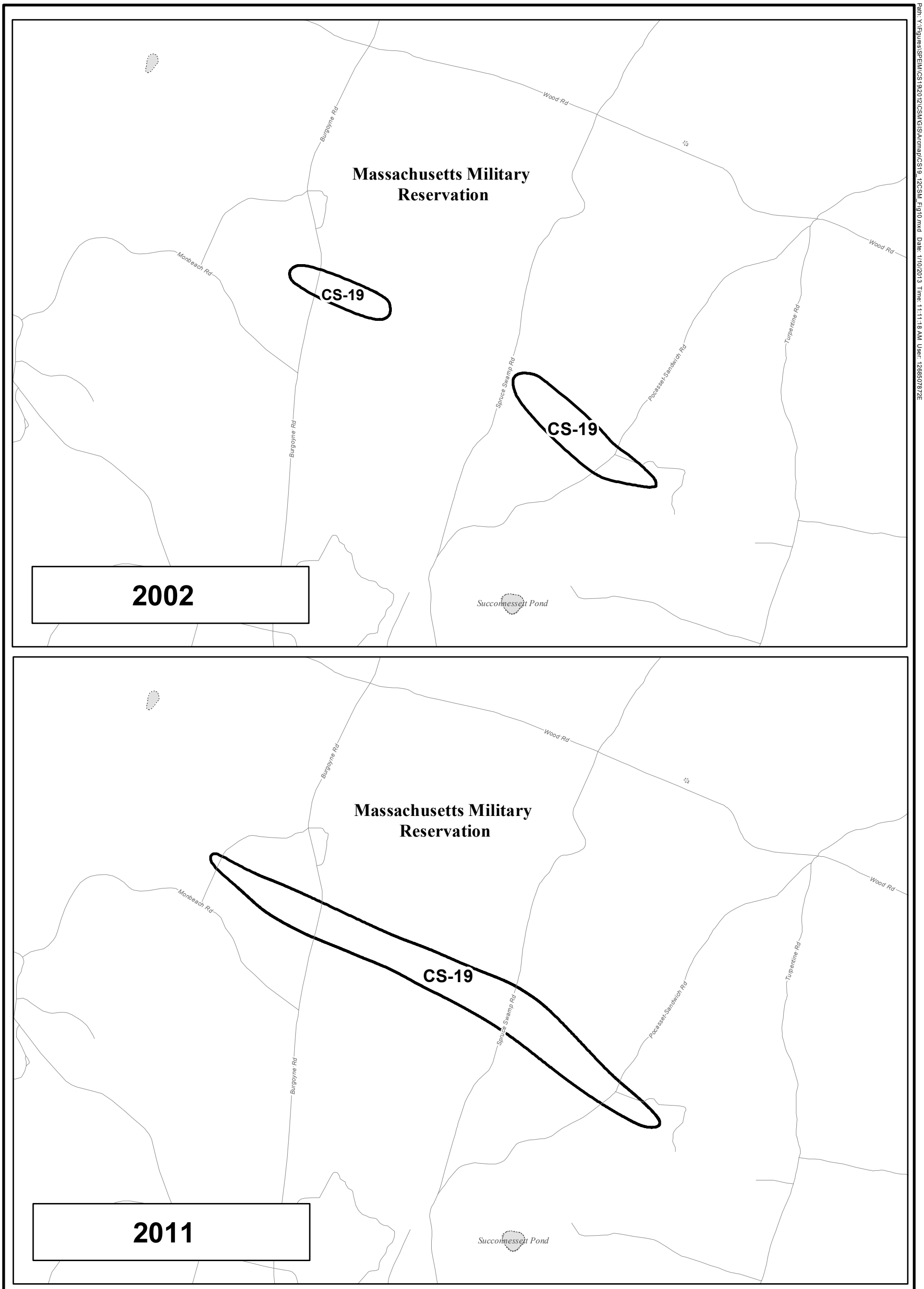
**FIGURE 9**

**CS-19 PLUME BOUNDARY TEMPORAL CHANGES 1998 AND 2000**

AFCEC - Massachusetts Military Reservation

*Conceptual Site Model*

CH2MHILL




Data Source: AFCEC, January 2013, MMR-AFCEC Data Warehouse

Legend

CS-19 Plume Boundary

N

0 590 1,180

Feet

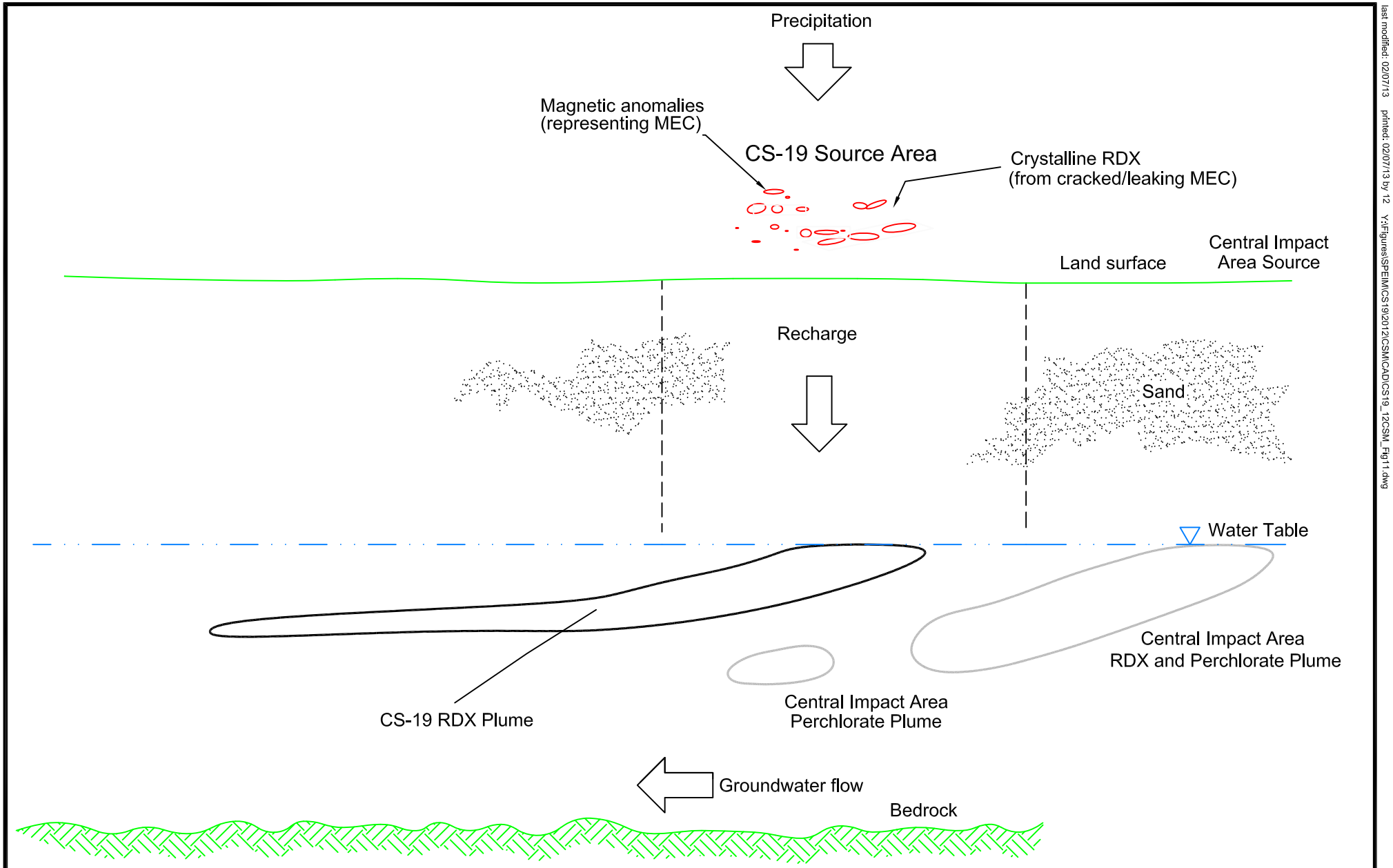
**FIGURE 10**

**CS-19 PLUME BOUNDARY TEMPORAL CHANGES 2002 AND 2011**

AFCEC - Massachusetts Military Reservation

*Conceptual Site Model*

CH2MHILL




## Legend

RDX = hexahydro-1,3,5-trinitro-1,3,5-triazine

MEC = Munitions and explosives of concern

figure not to scale

Data Source: *Final CS-19 Groundwater Feasibility Study*, (AFCEE 2009d)

0 60

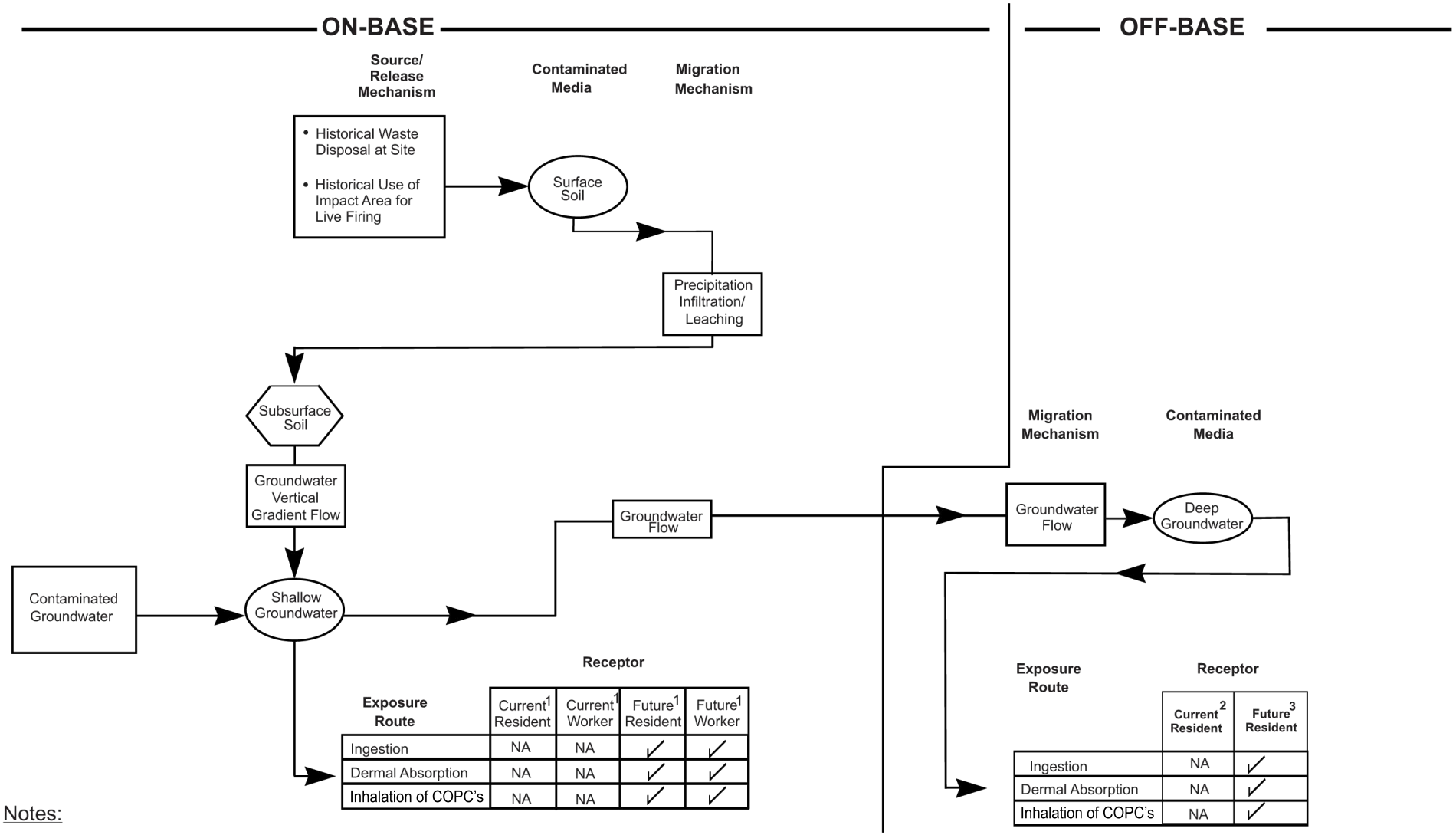
Scale in Feet

**FIGURE 11**

**CS-19 PLUME CONCEPTUAL MODEL**

AFCEC - Massachusetts Military Reservation

*Conceptual Site Model*




Notes:

1. There are no current residences overlying the plume and no existing water supply wells intercepting the plume. It is possible, although unlikely, that without institutional controls that there could be future residential or worker exposure to the CS-19 plume.

2. Existing data support the assumption that site contaminants have not migrated off-base.

3. MMR groundwater is classified as a sole source aquifer. Risk evaluated assuming groundwater could be available at any point in the aquifer by installing a municipal water supply well in the CS-19 study area.

NA= not applicable. COPC = Contaminant of Potential Concern

Exposure/Transport Media

Transport Media

JACOBS™

# Human Health Conceptual Exposure Model CS-19 Groundwater

Massachusetts Military Reservation
Cape Cod, Massachusetts

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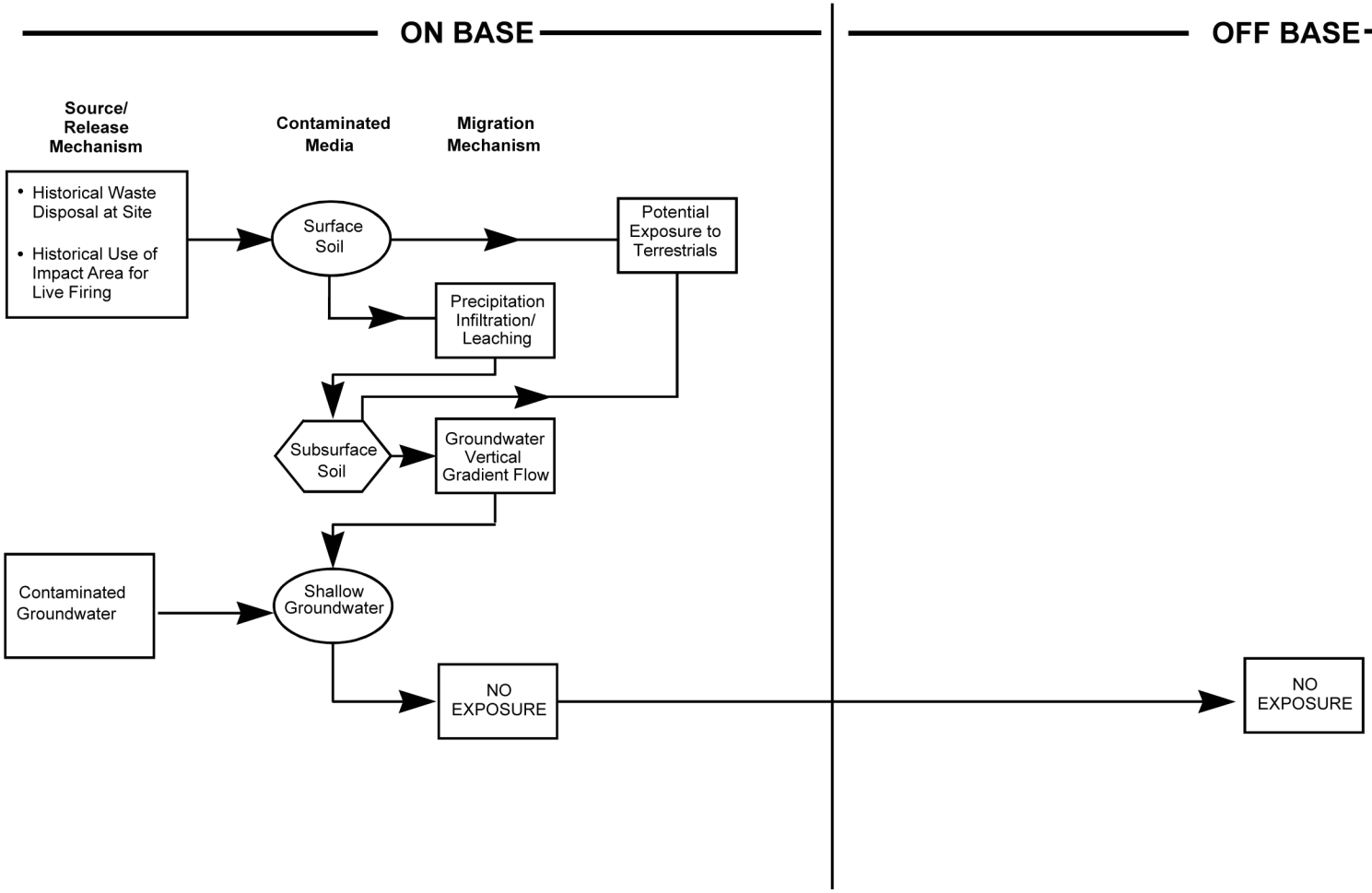
Figure 12




1. Intermittent puddles may form at the site during heavy rains. Terrestrials may ingest standing water in the puddles.

Transport Media

Exposure/Transport Media

JACOBS ENGINEERING

# Ecological Conceptual Exposure Model CS-19

Massachusetts Military Reservation
Cape Cod, Massachusetts

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Figure 13

# ATTACHMENT 1

# Attachment 1
# A Summary of the Updates and Revisions to this CSM
# CS-19 Groundwater Plume Conceptual Site Model

| Year | CSM Section | Change |
|---|---|---|
| 2013 | **5.2 Current Extent and Distribution of Contamination** | Updated concentration trend graphs. |
| | **7.3 Identify Potential Complete Exposure Pathways** | Added text that summarizes the results of a vapor intrusion evaluation at CS-19, as documented in the *Final 2011 MMR Vapor Intrusion Evaluation Technical Memorandum.* |

Key:
CS-19 = Chemical Spill-19
CSM = Conceptual Site Model
MMR = Massachusetts Military Reservation

# Appendix C

# Memorandum of Resolution

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO
ATTENTION OF

February 13, 2013

Engineering/Planning Division
Geo-Environmental Engineering Branch

Ms. Lynne Jennings
EPA – New England, Region 1
5 Post Office Square – Suite 100
Mail Code OSRR7-3
Boston, Massachusetts 02109-3912

Mr. Len Pinaud
Massachusetts Department of Environmental Protection
20 Riverside Drive
Lakeville, Massachusetts 02347

Re: Impact Area Groundwater Study Program
USEPA Region I Administrative Orders SDWA 1-97-1019 and 1-2000-0014
Memorandum of Resolution for the Draft Central Impact Area Interim Environmental Monitoring Report, January 2011 through December 2011

Dear Ms. Jennings and Mr. Pinaud:

On behalf of the National Guard's Impact Area Groundwater Study Program (IAGWSP), the U.S. Army Corps of Engineers (USACE) is pleased to provide the enclosed Memorandum of Resolution (MOR). This MOR is for U.S. Environmental Protection Agency (EPA) comments on the Responses to Comments Letter (RCL), dated October 10, 2012, for the Draft Central Impact Area Interim Environmental Monitoring Report, January 2011 through December 2011, dated June 2012. Comments were received on the Draft report from EPA in a letter dated September 6, 2012. Feedback from EPA on the RCL was provided on December 10, 2012. A comment resolution meeting (CRM) was held on January 16, 2013.

Your approval of the enclosed MOR is requested by February 28, 2013.

Please contact Dave Hill of the IAGWSP or Mark Anderson of USACE if there are any questions.

Sincerely,

Anthony T. Mackos, P.E.
Chief, Engineering/Planning Division

Enclosure

Copy Furnished:
Hard Copy:

EPA: Desiree Moyer

Electronic:
IAGWSP: Ben Gregson, Dave Hill, Marcia Goulet
EPA: Erin Sanborn
USACE: Gina Kaso, Jay Ehret, Mark Anderson, Dave Margolis, Ken Heim, Marie Wojtas

**Impact Area Groundwater Study Program**
**Memorandum of Resolution for**
**US Environmental Protection Agency Protection Responses to Comments on the**
**Draft Central Impact Area Interim Environmental Monitoring Report**
**January 2011 through December 2011**
**Dated: June 2012**

**U.S. Environmental Protection Agency Comments (Letter Dated: September 6, 2012) on DRAFT Central Impact Area Interim Environmental Monitoring Report, January 2011 through December 2011**

**GENERAL COMMENTS**

2) Monitoring Report does not present cross-sections or other figures that show that the vertical extent of Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) and perchlorate contamination has been delineated. Without presentation of a complete understanding of both the horizontal and vertical extent of contamination, an evaluation of the appropriateness of removing wells from the groundwater monitoring program cannot be conducted to its full extent. To address this concern and to further substantiate the rationale for removing wells from the monitoring program, please revise the Monitoring Report to incorporate cross sections and other figures that show that the vertical extent of contamination is well defined.

   **Response:** Cross-sections A through H previously developed by AMEC, some of which were presented in Watermark's 2010 EMR, will be updated and provided in the 2011 EMR. These figures will be referenced in the 2011 EMR where appropriate.

   **Additional Comment:** The response partially addresses the comment. The Monitoring Report now includes cross-sections for RDX and perchlorate contamination as requested by the comment. However, Figure 3-13, Central Impact Area Monitoring Wells in Perchlorate Monitoring Program, suggests that perchlorate cross-sections A-A' to H-H' have been prepared and included in the document, but only cross-sections A-A', B-B' and G-G' were actually presented in the electronic version of the document. Refer to Additional Technical Review Comment No. 1 below for further information regarding this issue. Revise the Monitoring Report to include the missing perchlorate cross-sections. Also, provide a reference to the eight cross-sections in the text of the document.

   **Resolution: Perchlorate cross-section C-C' bisects the plume laterally and cross-section G-G' bisects the plume longitudinally. At the 1/16/13 comment resolution meeting it was agreed that, since perchlorate concentrations are less than the lowest contoured concentration of 2 µg/L for all other cross-sections, only perchlorate cross-sections C-C' and G-G' will be included in the final CIA EMR. Figure 3-13 will be updated to only show lines of cross-section for C-C' and G-G'.**

3) The Monitoring Report provides trend plots for selected wells. While these plots are very useful, this report should contain additional commentary such that the reader can understand the history. For instance, were all well where there have been historic detections assessed in this manner, but only select plots included within this document? Was the judgment made that the plots shown are representative in some sense? Were some selected because they are of particular importance or interest? The reader should have some assurance that these plots are not at odds with trends at other nearby monitoring well screens that are not shown.

   **Response**: Wells for illustration of trend data were selected to be representative of the upgradient (near source), main body, and leading edges of each plume and are meant to highlight obvious trends. Trend data for all wells was reviewed before selecting the trends for illustration. The text "Wells selected for illustration have been selected to be representative of the upgradient (near source), main body, and leading edges of each plume and are meant to highlight obvious trends. Trend data for all wells was reviewed before selecting the trends for illustration" will be added to Section 3.2 to indicate that the wells selected for illustration are representative of trends within the indicated portions of each plume.

**Additional Comment:** The response partially addresses the comment. While additional text regarding contaminant trends has been added to the Monitoring Report, many of the trend plots were not included to support and illustrate the trends discussed in the text. Refer to Additional Technical Review Comment No. 1 below for further information regarding this issue.

**Resolution: The long standing convention in IAGWSP annual monitoring reports is to include trend plots only for wells that are interpreted to best illustrate the overall trends observed in the upgradient, core and leading edge portions of a given plume. Their inclusion is intended more to help visualize plume behavior on a macro scale than as a means to display all data and are therefore limited in number. At the 1/16/13 comment resolution meeting it was agreed that additional trend plots will be added to illustrate trends discussed in the text, including one for MW-203M2.**

4) It is not clear how RDX groundwater contaminant plumes shown in the Monitoring Report figures (e.g., Figures 2-1, 3-1, 3-2 and 3-3) were defined. It appears that at many locations, the contaminant plumes have been defined with limited monitoring well data points. For example, Figure 2-1, Central Impact Area Monitoring Wells in Explosives Monitoring Program, shows the Northeast Plume extending northwest yet there are no wells northwest of well MW-03M2 currently in the explosives monitoring program to show that the plume only extends approximately 1,000 feet northwest to its currently defined boundaries (wells not included in the explosives monitoring program are represented by black circles). Additionally, no wells are located northwest of well MW203-M2 to substantiate the plume contours shown in this portion of the plume. The figure legend indicates that the plume contours are "dashed where inferred", however, all of the plume contours are dashed, so it is not clear where the plume boundaries are considered to be inferred or defined.

**Additional Comment**: The response does not address the comment. The original comment noted that at many locations, the contaminant plumes have been defined with limited monitoring well data points. For example, Figure 2-1, Central Impact Area Monitoring Wells in Explosives Monitoring Program, shows the Northeast Plume extending northwest yet there are no wells northwest of well MW-03M2 currently in the explosives monitoring program to show that the plume only extends approximately 1,000 feet northwest to its currently defined boundaries. Additionally, no wells are located northwest of well MW203-M2 to substantiate the plume contours shown in this portion of the plume. Finally, the first paragraph in the original comment noted that the figure legend indicates that the plume contours are "dashed where inferred"; however, all of the plume contours are dashed, so it is not clear where the plume boundaries are considered to be inferred or defined. The RTC does not address the issues discussed above, but instead, only responds to the additional issues highlighted in specific items "a" through "d" below. The Monitoring Report should be revised to incorporate additional monitoring wells at the locations discussed above, or provide justification why additional wells are not warranted. In addition, the figures should be revised to clearly indicate whether the plume boundaries are considered to be inferred or defined.

**Resolution: Groundwater investigations within the Camp Edwards impact area have mostly been conducted along existing roadways due, in part, to the time, hazards and expense involved in building access roads in areas where unexploded ordnance is known or likely to be present. The entire area is also recognized as high quality habitat for numerous state listed endangered species. Therefore, in areas where drilling was not deemed critical during previous investigations, groundwater modeling and professional judgment are employed to approximate plume boundaries. The groundwater model for the CIA plume is currently being updated to facilitate a well field design for the groundwater remediation system. At the 1/16/13 comment resolution meeting it was agreed that once this work is completed (March 2013) reasonable estimates of the fate and transport of each part of the plume can be determined and**

**final decisions can be made regarding the need for additional monitoring wells for the purpose of long term monitoring of the CIA plume and system performance monitoring.**

Section 3.0, Chemical Results, indicates that "the plan view of the perchlorate and RDX plumes are slightly modified versions of those obtained from the Draft CIA Feasibility Study (Tetra Tech EC, 2010). Modifications were made using data collected since the Draft FS was developed." However, it is unclear how the new and older data were used in concert with one another. Given the fact that contaminant plumes are not static and change in configuration over time, it is not clear to what extent the current graphical presentations represent current conditions. Please revise the Monitoring Report to further clarify how the plume boundaries were developed, particularly in areas where no monitoring data appear to exist.

**Additional Comment:** The second paragraph of the original comment noted that Section 3.0, Chemical Results, indicates that "the plan view of the perchlorate and RDX plumes are slightly modified versions of those obtained from the Draft CIA Feasibility Study (Tetra Tech EC, 2010). Modifications were made using data collected since the Draft FS was developed." The original comment further states "However, it is unclear how the new and older data were used in concert with one another. Given the fact that contaminant plumes are not static and change in configuration over time, it is not clear to what extent the current graphical presentations represent current conditions." However, the Monitoring Report does not address the concern with the mixed use of older data and newer data. The Monitoring Report should be revised to discuss this issue.

**Resolution: The general shape and extent of the CIA plume was established during the RI/FS process (i.e. using available data). The data acquired during the reporting period covered by this (2011) or any other annual monitoring report is typically used only to make minor modifications to previous depictions of the plume, when appropriate. The groundwater model for the CIA plume is currently being updated, under a separate initiative, to facilitate a well field design for the groundwater remediation system. A necessary step in this process is the development of an updated plume shell which accounts for all chemical data available up to a specified cutoff date. Additional detail regarding the use of older data vs newer data will be provided in conjunction with the presentation of the updated plume shell. Once the updated plume shell is presented and approved all subsequent plume graphics will be derived from that plume shell. However, for the purpose of the interim environmental monitoring report for 2012 numerous cross sections were updated by hand and at the 1/16/13 comment resolution meeting it was agreed that not all cross sections were needed in the final report. RDX sections C-C', D-D' and G-G' and perchlorate sections C-C' and G-G' are proposed for inclusion.**

In order to confirm the interpretations presented in the document and in consideration of the groundwater remedy selected in EPA's Decision Document, Central Impact Area Soil and Groundwater Units, dated March 2012 (Decision Document), it is recommended that the Army/NGB expand the monitoring well network in future sampling events. Specific recommendations are detailed below:

a) The selected remedy for groundwater, as detailed in the Decision Document, includes groundwater extraction from three wells along Burgoyne Road. The proposed locations of these extraction wells are shown on Figure 7, Configuration of Alternative 4 (Modified) Treatment at Burgoyne Road, of the Decision Document. Additional monitoring wells should be incorporated into the monitoring program at locations downgradient of the extraction wells to monitor the effectiveness of the wells at capturing the plumes. Some existing wells can likely be used for this monitoring; however, no wells currently exist immediately west and northwest of well MW-123M1, M2. This is an area where installation of new monitoring wells should be considered, especially considering that Table 4-1, Groundwater Monitoring Program Recommendations, indicates that explosives concentrations in well MW-123M1 have increased in the last eight samples collected since 2008.

**Response**: The increase in RDX concentration at MW-123M1, from ND in 2007 to 5.49 µg/L in 2012, is expected since a similar concentration increase occurred at the upgradient MW-209M1. The RDX concentration at MW-209M1 was recently measured at 7.42 µg/L, down from a high of approximately 7.9 µg /L in 2009, suggesting that the RDX peak has moved downgradient of MW-209M1 and that the plume front is now moving through MW-123M1. The remedy selected in the FS (Alternative 4 Modified) includes an extraction well (EW-401 Burgoyne Road). This well, along with another extraction to be located further northeast along Burgoyne Road, is expected to move the RDX plume, currently in the vicinity of MW-123M1, northward and will ultimately capture the portion of the RDX plume in the vicinity of MW-123M1. Modeling also indicates that the small un-captured portion of the plume downgradient of MW-123M1 will quickly degrade to less than 0.6 µg/L before reaching Wood Road. Given that the plumes are predicted to move northward once the extraction system is in place, the existing MW-171M1 is expected to be in a location suitable for evaluating whether or not capture is being achieved by the proposed extraction well EW-401 and no other wells are being proposed in this area.

**Additional Comment**: The response partially addresses the comment. The response states that since the plumes are predicted to move northward once the extraction system is in place, the existing MW-171M1 is expected to be in the location suitable for evaluating whether or not capture is being achieved by the proposed extraction well EW-401. Figure 2-1 does not present the locations of existing well MW-171M1 or the proposed extraction well EW-401. Revise the Monitoring Report and relevant figures to incorporate wells MW171M1 and EW-401 and the discussion presented in this RTC.

**Resolution: At the 1/16/13 comment resolution meeting it was agreed that MW-171M1 will be added to the relevant figures. However, the exact location of EW-401 will not be determined until the groundwater modeling work is completed.**

**[The well identified in the last sentence of the Response was incorrectly identified as well "MW-171M1", and should have been "MW-176M1", making the Resolution to add MW-171M1 to the figures unnecessary, as MW-176M1 is currently identified on all figures – KJH 04/11/13]**

b) Additional wells will also be necessary to monitor those portions of the plume that will not be captured by the extraction wells. Specifically, Figure 2-1 shows that the Northwest Plumelet and Southwest Plumelet have already bypassed Burgoyne Road. Wells northwest and downgradient of these smaller plumes should be incorporated into the monitoring program to evaluate contaminant concentrations at the leading edges of these plumes.

**Response**: The Northwest Plumelet is not within the predicted capture zone of the selected remediation wells and the plumelet is expected to continue migrating downgradient in a direction roughly parallel with Jefferson Road. Given that the travel time in this portion of the aquifer is on the order of only hundreds of feet per year, it seems premature to install a well downgradient of the Northwest Plumelet at the expected intersection with Jefferson Road, but the installation of a monitoring well in this area is something that should be considered in the future.

The Southwest Plumelet is only based on a single monitoring well RDX detection of 3.8 µg/L measured in October 2006 and was measured to be ND in April 2006 and May 2007. Given that the plumelet is based on a single elevated measurement, which may question the validity of the value and certainly implies that the plumelet is very small, it is not recommended that the effort be expended to validate this measurement by installing an monitoring well that, unless sampled very

frequently would miss the suspect plumelet altogether. Also, given the size of the plumelet even finding the plumelet with a single drive-point would be impractical. Instead, the plan view of the RDX and perchlorate plumes presented in the EMR will be revised as necessary to present a better representation of the plumes throughout the CIA.

**Additional Comment:** The response partially addresses the comment. The response states the installation of a monitoring well downgradient of the Northwest Plumelet is "something that should be considered in the future." While the timing of the installation of additional downgradient well(s) may be an issue for further discussion between EPA and MMR, the necessity for such wells is not an issue, as EPA can only determine that the plume is no longer of concern with empirical data; currently, such data or well locations do not exist. The response to the Southwest Plumelet does not address any future investigation of the plume. While it is agreed that the plume as shown on Figure 2-1 is small, it was delineated from only one well. One well is not sufficient to delineate the full extent of a plume, as the current well may be at the leading, or trailing edge of the plume. In order to fully demonstrate that the plume is insignificant, additional data will be required. One recommendation would be to advance a series of direct push borings in the anticipated vicinity of the plume, and collect groundwater samples through temporary wells which can be abandoned after the sampling activities are completed. EPA and MMR should discuss the appropriate path forward in investigating this plume.

**Resolution: At the 1/16/13 comment resolution meeting it was agreed that the text will be revised to indicate that the EPA and IAGWSP will consider the necessity for additional monitoring wells for small, detached plumelets once the groundwater modeling work is completed (March 2013).**

d) The lateral extent of the Northeast Plume does not appear well defined. Figure 2-1 shows that no wells are located northeast of MW-03M2, northeast of MW-203M2, and west of MW-204M1, M2. It is recommended that additional wells be added to the monitoring program in these areas to better define the Northeast Plume, or a discussion be provided that justifies why the installation of these wells is not warranted.

**Response**: The eastern half of the Northeast Plume is drawn based on concentrations measured at MW-113M1 and MW-113M2 and not concentrations measured at the MW-03 well cluster. The only measurable concentration measured at the MW-03 was 10 µg/L in October 2004, which was preceded by an ND measurement in May 2003 and followed by an ND measurement in August 2005. Therefore, since the only elevated RDX measurement was not reproduced, the MW-03 cluster is considered to represent the northeast boundary of the Northeast Plume and no additional monitoring wells are recommended for areas northeast of the MW-03 cluster.

The MW-442 well cluster is located downgradient of the eastern portion of the Northeast Plume, however, the MW-442M1 and MW-442 M2 well screens are potentially too deep to monitor the upgradient RDX plume and consideration could be given to adding an additional screen at this location at an elevation determined by predicting where the upgradient portion of the plume will intersect the well screen.

The western half of the Northeast Plume is drawn based on concentrations measured at MW-02M2. Downgradient of the western half of the Northeast Plume elevated concentrations of RDX have been measured at MW-96M1 and MW-203M2. There are no monitoring wells downgradient of MW-203M2 but modeling indicates that the portion of the plume downgradient of Pocasset-Sandwich Road will degrade to less than 0.6 µg/L before reaching the base boundary.

No monitoring wells are recommended for the area immediately west of the MW-204 cluster due to the extensive network of monitoring wells already located downgradient along Pocasset-Sandwich and Goat Pasture Roads.

**Additional Comment:** The response partially addresses the comment. The response states that the eastern half of the Northeast Plume is based on concentrations measured at MW113M1 and MW-113M2; because MW-03 only contained a measureable concentration in one sampling event, it is considered to represent the northeast boundary of the Northeast Plume. While this rationale appears reasonable, the installation of an addition well screen at the MW-442 cluster as discussed in the RTC may be warranted if the concentrations in well MW-03 increase in future sampling events. Also, the location of the MW-442 cluster should be shown on the Monitoring Report figures.

**Resolution: At the 1/16/13 comment resolution meeting it was agreed that the text will be revised to indicate that the EPA and IAGWSP will consider the necessity for additional monitoring wells once the groundwater modeling work is completed, including an additional screen at MW-442. The MW-442 location will be added to the report.**

7) The Monitoring Report recommends discontinuing monitoring for explosives and/or perchlorate in several monitoring wells associated with the CS-19 plume since this plume is currently part of the Air Force Center for Environmental Excellence (AFCEE) monitoring program. The Monitoring Report did not identify specific wells that are included in the AFCEE monitoring program, at what sampling frequency, and for what analyses, so it unclear whether the wells proposed for removal from the CIA monitoring program are appropriate. It is recommended that additional information be provided to ensure that wells recommended for removal from the CIA monitoring program are, in fact, included in the AFCEE monitoring program.

**Response**: AFCEE prepares annual reports on sampling conducted in the CS-19 plume pursuant to a decision document issued under the IRP. Thus, as a matter of fiscal law, the IAGWSP is precluded from expenditures associated with activities related to the CS-19 plume. AFCEE's monitoring reports detail the sampling conducted to track the CS-19 plume.

**Additional Comment**: The response does not address the comment. While the sampling activities associated with the CS-19 plume may be covered under a separate AFCEE program, sufficient justification for the deletion of these wells from the CIA sampling program is warranted for EPA to concur with the request.

**Resolution: At the 1/16/13 comment resolution meeting it was agreed that IAGWSP will append the most recent AFCEE CS-19 report to the final CIA report.**

**Specific Comments**

9) Page 1-1, Section 1.0, Introduction: The last sentence states, "As agreed with the regulatory agencies [the Monitoring Report] also includes groundwater data from wells within the thin plume of RDX that stretches between the 2000-meter berm at the J-1 range into the eastern boundary of the CIA that was first discovered in 2007." The Monitoring Report does not indicate when this agreement was made nor does it specify the regulatory agencies involved in the decision. Additionally, the location of this plume is unclear as the 2000-meter berm at the J-1 range has not been identified specifically on site figures. Please revise the Monitoring Report to clarify when and with whom the decision was made to incorporate data from wells within the RDX plume "that stretches between the 2000-meter berm at the J-1 range into the eastern boundary of the CIA that was first discovered in 2007." Additionally, please

revise site figures to identify the 2000-meter berm at the J-1 range and provide additional clarifying text to describe the location of this plume within the CIA (e.g., identify the wells which monitor this plume).

**Response**: The change was documented in a Project Note signed on 15 Sept 2011 (EDMS No. 112152).

**Additional Comment:** The response partially addresses the comment. While the RTC does provide a statement that the referenced information was included "in a Project Note signed on 15 Sept 2011 (EDMS No. 112152)", it is still not clear which regulatory agencies participated in the agreement, nor has the note been provided in the Monitoring Report. Additionally, the location of this plume is unclear as the 2000-meter berm at the J-1 range has not been identified specifically on site figures. Please revise the Monitoring Report to clarify which regulatory agencies participated in the agreement, and provide a copy of the agreement as an appendix to the Monitoring Report. In addition, the location of the plume should be shown on site figures.

**Resolution: At the 1/16/13 comment resolution meeting it was agreed that the referenced project note (dated September 2011) will be appended to the final CIA EMR.**

16) Page 3-3, Section 3.2.1, Explosives, Main Plume: The trend evaluations for the Main Plume discuss data that cannot be verified or are inconsistent with results presented in the data summary tables. For example, the second paragraph discusses the evaluation of RDX concentrations in well MW-91S, and indicates that RDX "has steadily decreased to a recent low of 0.2 µg/L (31 May 2011)." According to Table 3-1, Summary of Groundwater Monitoring Results for Perchlorate, RDX, HMX, and 4A-DNT – 2011, RDX was not detected in well MW-91S during the May 2011 sampling event. The text of the Monitoring Report should be revised to more accurately reflect the results for MW-91S. An additional discrepancy is noted in the discussion of results for well MW-223M2. The Monitoring Report states, in the last paragraph in the discussion of the Main Plume, "RDX concentrations at MW-223M2 [have] been less than 0.31 µg/L since 2002, with the exception of the period between 2005 and 2008 when concentrations were as high as 1 µg/L." Since historic groundwater concentrations prior to 2011 were not provided for review within this document, it is difficult to verify these conclusions. Furthermore, Table 3-1 indicates that RDX was detected in well MW-223M2 at a concentration of 2.18 ug/L in November 2011, which is twice the concentration of the reported high described above. Please revise Section 3.2.1 to ensure that the data used for the trend evaluations are accurate and consistent with those reported in the data summary tables. Discussions of trends should be revised to reflect accurate data.

**Response**: Concentration references made throughout the document will be checked for consistency with tabular data.

**Additional Comment:** The response to this comment could not be evaluated because Table 3-1, Summary of Groundwater Monitoring Results for Perchlorate, RDX, HMX, and 4A-DNT -2011, was not included in the electronic version of the revised Monitoring Report.

**Resolution: Table 3-1 was included in the Draft CIA Interim EMR dated June 2012 and no changes to the Table 3-1 concentrations have been made as a result of comments to the document. However, at the 1/16/13 comment resolution meeting it was agreed that a disk containing historic data will be included in the final report.**

23) Figure 1-1, Location of Central Impact Area: Figure 1-1 shows the location of the RDX plume, as defined by a 0.6 ug/L boundary, but the figure does not define the significance of the 0.6 ug/L boundary. The figure should clearly state that 0.6 ug/L is the current RBC for RDX. Please revise Figure 1-1 to

state the significance of the concentration value that defines the current extent of the RDX plumes.

**Response**: The legend on Figure 1-1 will be revised to indicate that the significance of the 0.6 µg/L RDX boundary.

**Additional Comment**: The response does not address the comment. Figure 1-1, Location of Central Impact Area, does not clearly state that 0.6 µg/L is the current risked-based concentration (RBC) for RDX. Revise Figure 1-1 to state the significance of the concentration value that defines the current extent of the RDX plume.

**Resolution: At the 1/16/13 comment resolution meeting it was agreed that the legend regarding RDX will be revised to indicate what the gray concentration footprint is ("Shown to the 0.6 µg/L Risk Based Concentration for RDX"). The figure has been revised and will be included in the final report.**

24) Figure 4-1, Proposed RDX Sampling Locations: Figure 4-1 identifies a sample location just south of well MW-123M1,M2 in the western portion of the site, as a location to be included in future groundwater monitoring events; however, the well number has not been identified on the figure for this sampling location, which is designated as such with a solid black circle. For clarity, please revise Figure 4-1 to identify the well number for this sampling location.

**Response**: The unlabeled location on Figure 4-1 will be revised to indicate the location of well MW-102M2.

**Additional Comment:** The response does not address the comment. Figure 4-1, Central Impact Area Proposed RDX Sampling Locations, identifies a sample location just south of well MW-123M1,M2 in the western portion of the site, as a location to be included in future groundwater monitoring events. However, the well number has not been identified on the figure for this sampling location, which is designated as such with a solid black circle. For clarity, revise Figure 4-1 to identify the well number for this sampling location.

**Resolution: At the 1/16/13 comment resolution meeting it was agreed that the unlabeled location on Figure 4-1 will be revised to indicate "MW-102M2". The figure has been revised and will be included in the final report.**

25) Table 3-1, Summary of Groundwater Monitoring Results for Perchlorate, RDX, HMX, and 4A-DNT – 2011: The title of Table 3-1 suggests that results for only perchlorate, RDX, HMX, and 4A-DNT would be included in the table. However, results for TNT and 2A-DNT are also included in the table. EPA suggests either changing the title to annotate all of the analytes within the table or changing the title simply to, "Summary of Groundwater Monitoring Results". Please revise Table 3-1.

**Response**: The title of Table 3-1 will be revised to "Summary of Groundwater Monitoring Results".

Additional Comment: The response to this comment could not be evaluated because Table 3-1 was not included in the electronic version of the revised Monitoring Report.

**Resolution: Table 3-1 has been revised and included in this MOR.**

26) Table 3-1, Summary of Groundwater Monitoring Results for Perchlorate, RDX, HMX, and 4A-DNT – 2011: The table does not compare the results to applicable chemical-specific screening criteria. Applicable screening criteria (i.e., EPA RSLs, Massachusetts Contingency Plan (MCP) S-1 GW-1

groundwater standards, etc.) should be included in a separate column to aid in evaluation of the data. Additionally, any detections that exceed the criteria should be highlighted in some manner (i.e., bold text, underlined, shaded, etc.). To increase the utility of the summary table, please revise Table 3-1 to incorporate applicable screening criteria and differentiate any results that exceed this screening criteria. This comment also applies to Table 3-2, Groundwater Monitoring Results for Samples Collected in 2011.

**Response**: Tables 3-1 and 3-2 will be revised to include screening and concentrations exceeding the screening criteria will be bold highlighted.

**Additional Comment:** The response to this comment could not be evaluated because Table 3-1 and Table 3-2, Groundwater Monitoring Results for Samples Collected in 2011, were not included in the electronic version of the revised Monitoring Report.

**Resolution: Tables 3-1 and 3-2 have been revised and included in this MOR.**

27) Tables 3-1 and 3-2: For the columns titled "Top of Well Screen" and "Bottom of Well Screen", please annotate values in 'feet below water table' as opposed to 'msl'.

**Response**: The MOR for the CIA EMR in 2012 (EDMS #113499) indicates that depth below water table information will be added to Table 3-1 and not Table 3-2. Table 3-1 will be revised according to the previously agreed up MOR. No changes are recommended to Table 3-2.

**Additional Comment:** The response to this comment could not be evaluated because Tables 3-1 and 3-2 were not included in the electronic version of the revised Monitoring Report.

**Resolution: Tables 3-1 has been revised to include two columns of additional information, including "Top of Well Screen – feet below water table" and "Bottom of Well Screen – feet below water table". The revised table is included with this MOR. Table 3-2 was not included in the RCL, as indicated above and previously agreed to by the EPA.**

28) Table 4-1, Groundwater Monitoring Program Recommendations: The following comments were prepared based on review of Table 4-1. The comments primarily identify inconsistencies in the data presentation, which do not affect the recommendations.

a) In the Rationale for Explosives Sampling Reduction column, the Monitoring Report often describes groundwater concentrations, but it does not specifically state the chemical to which the concentrations apply. Please revise Table 4-1 to specifically identify the chemical to which the groundwater concentrations apply.

**Response:** "Explosives" in the header of Table 4-1 refers to RDX exclusively. The headers on Table 4-1 will be changed to reflect this fact.

**Additional Comment**: The response does not address the comment. In the "Rationale for Explosives Sampling Reduction" column, the Monitoring Report often describes groundwater concentrations, but it does not specifically state the chemical to which the concentrations apply. Please revise Table 4-1, Groundwater Monitoring Program Recommendations, to specifically identify the chemical to which the groundwater concentrations apply.

**Resolution: Table 4-1 has been revised to specifically indicate the chemical to which the concentrations apply throughout.**

b) Well MW-105M1 – The Monitoring Report incorrectly reports explosives data for this well. It indicates that Well MW-105M1 has been "ND for 10 consecutive samples since 2007." However, Table 3-1 indicates that RDX was detected in well MW-105M1 at a concentration of 0.56 ug/L in November 2011 and at 0.39 ug/L in June 2011. Please revise Table 4-1 to present accurate data for well MW-105M1.

**Response**: The RDX and perchlorate columns in Table 4-1 describing the rationale for sampling frequency will be reviewed for accuracy and revisions will be made where necessary.

**Additional Comment:** The response to this comment could not be evaluated because Table 3-1 was not included in the electronic version of the revised Monitoring Report.

**Resolution: Table 4-1 has been updated to ensure accuracy and is attached to this MOR. In addition, at the 1/16/13 comment resolution meeting it was agreed that a disk containing historic data will also be included in the final report.**

c) Well MW-112M1 – The Monitoring Report proposes to discontinue sampling at MW-112M1 with the rationale that "contamination [is] better represented by MW112M2." It is unclear how contamination is better represented at this location by MW-112M2. Table 3-1 shows that explosives were not detected in either MW-112M1 or MW-112M2 during 2011. Please provide further clarification for eliminating MW-112M1 from the monitoring program. The rationale should concentrate on the screened interval of this well in relation to the existing plume depth.

**Response:** The rationale provided for the discontinuance of sampling at MW-112M1 was meant to indicate that concentrations at MW-112M2 have historically been higher than at MW-112M1 and with no clearly identified upgradient and continuing RDX source, monitoring only the historically more contaminated of the two well screens is more appropriate. The rationale will be revised to "With no clearly identified upgradient RDX source, sampling only the historically contaminated of the MW-112 well cluster is more appropriate".

**Additional Comment:** The response to this comment could not be evaluated because Table 3-1 was not included in the electronic version of the revised Monitoring Report.

**Resolution: Table 4-1 has been updated to ensure accuracy and is attached to this MOR. In addition, at the 1/16/13 comment resolution meeting it was agreed that a disk containing historic data will also be included in the final report.**

d) Well MW-91M1 – The Monitoring Report provides incorrect information in the Rationale for Explosives Sampling Reduction column for this well. This column states, "Decreased from historic high of 24 ug/L in 2006 to ND in 2011." However, Table 3-1 indicates that RDX was detected in well MW-91M1 at a concentration of 3.12 ug/L in May 2011 and 2.08 ug/L in December 2011. HMX was also detected in well MW-91M1 during 2011. For accuracy, please revise Table 4-1 to provide the correct data for well MW-91M1 and scrub this table to be sure it is 100% accurate.

**Response**: The RDX and perchlorate columns in Table 4-1 describing the rationale for sampling frequency will be reviewed for accuracy and revisions will be made where necessary.

**Additional Comment:** The response to this comment could not be evaluated because Table 3-1 was not included in the electronic version of the revised Monitoring Report. However, well MW-91M1 does not mention a detection of HMX in Table 4-1 in the "Rationale for Explosives

Sampling Reduction" column. For accuracy, please revise Table 4-1 to provide the correct data for well MW-91M1.

**Resolution: Table 4-1 has been updated to ensure accuracy and is attached to this MOR. In addition, at the 1/16/13 comment resolution meeting it was agreed that a disk containing historic data will also be included in the final report.**

e) Well OW-2 – The Monitoring Report provides incorrect information in the Rationale for Perchlorate Sampling Reduction column. This column states, "Decreased from historic high of 1.67 ug/L in 2002 to ND in 2011." However, Table 3-1 indicates that perchlorate was detected in well OW-2 at a concentration of 0.26 ug/L during the June 2011 sampling event, and 0.2 ug/L in November 2011. For accuracy, please revise Table 4-1 to provide the correct data for well OW-2 and scrub this table to be sure it is 100% accurate.

**Response:** The RDX and perchlorate columns in Table 4-1 describing the rationale for sampling frequency will be reviewed for accuracy and revisions will be made where necessary.

**Additional Comment:** The response to this comment could not be evaluated because Table 3-1 was not included in the electronic version of the revised Monitoring Report. However, in the "Rationale for Perchlorate Sampling Reduction" column, well OW-2 has not been revised. For accuracy, please revise Table 4-1 to provide the correct data for well OW-2.

**Resolution: Table 4-1 has been updated to ensure accuracy and is attached to this MOR. In addition, at the 1/16/13 comment resolution meeting it was agreed that a disk containing historic data will also be included in the final report.**

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, REGION I**
5 Post Office Square, Suite 100
Boston, MA 02109-3912

2 April 2013

MAJ Shawn Cody
Program Manager
Army National Guard
Impact Area Groundwater Study Program Office
PB 0516 West Outer Road
Camp Edwards, MA 02542-5003

Subject: EPA Conditional Approval of Memorandum of Resolution for the Draft Central Impact Area Interim Environmental Monitoring Report

Dear MAJ Cody:

EPA has reviewed the above-referenced document and has the following comments which are attached. The EPA conditionally approves this submission in accordance with Section XV of Administrative Order SDWA I-97-1019.

Please submit the Final CIA Environmental Monitoring Report with the necessary changes detailed in the attachment by 11 April 2013.

Do not hesitate to contact me at 617.918.1210 or Desiree Moyer at 617.918.1257 should you have any questions.

Sincerely,

Lynne A. Jennings
MMR Team Leader

Cc: L. Pinaud/MassDEP
J. Dolan
D. Moyer
B. Lim
T. Conway

**MOR FOR DRAFT CIA INTERIM ENVIRONMENTAL MONITORING REPORT**

1. **MW-112M1:** EPA's original comment for monitoring well MW-112M1 stated:

   *The Monitoring Report proposes to discontinue sampling at MW-112M1 with the rationale that "contamination [is] better represented by MW112M2." It is unclear how contamination is better represented at this location by MW-112M2. Table 3-1 shows that explosives were not detected in either MW-112M1 or MW-112M2 during 2011. Please provide further clarification for eliminating MW-112M1 from the monitoring program. Rationale should concentrate on the screened interval of this well in relation to the existing plume depth.*

   In the MOR, the Army/NGB states that concentrations in MW-112M2 have been historically higher than at MW-112M1 and goes on to clarify that Table 4-1 would be revised to state "With no clearly identified upgradient RDX source, sampling only the historically contaminated of the MW-112 well cluster is more appropriate." However, the "Rationale for Explosives Sampling Reduction" column for monitoring well MW-112M1 in Table 4-1 has not been revised to include the revised text as stated. Please revise the Rationale column in Table 4-1 for monitoring well MW-112M1 to include the referenced explanation.

2. **MW-123M1 and MW-123M2:** Table 4-1 recommends that the sampling frequency for monitoring wells MW-123M1 and MW-123M2 be reduced from semi-annual to annual. However, as noted in the "Rationale for Explosives Sampling Reduction" column, the RDX concentrations have actually increased over the last 8 samples in monitoring well MW-123M1, and as shown on Figure 1, these wells are located in the immediate vicinity of extraction well EW-02. The proximity of these monitoring wells to extraction well EW-02 makes them critical to documenting water level draw downs and contaminant concentration reductions imparted by the extraction well. Until steady state conditions have been re-established in the aquifer, continue monitoring wells MW-123M1 and MW-123M2 on a semi-annual sampling frequency.

3. **MW-176M1:** Table 4-1 recommends that the sampling frequency for monitoring well MW-176M1 be reduced from semi-annual to annual. However, this monitoring well is located directly downgradient of extraction well EW-01 along the longitudinal axis of the RDX plume and should be frequently sampled to gauge the potential reduction of RDX concentrations imparted by the extraction well. In addition, the latest fate and transport model simulations presented in the Draft Final Design Document indicate that the RDX contaminant plume will migrate offsite at concentrations greater than 2 micrograms per liter around the year 2027. Given this concern, monitoring well MW-176M1 will be critical in monitoring the plume movement over time. Until steady state conditions have been re-established in the aquifer, continue monitoring well MW-176M1 on a semi-annual sampling frequency.

4. **MW-223M1 and MW-223M2:** Table 4-1 recommends that the sampling frequency of these wells be reduced from semi-annual to annual. However, these monitoring wells are located down gradient of the extraction system along the longitudinal axis of the RDX plume. Because the Draft Final Design Document fate and transport simulations indicate that the RDX plume will migrate offsite around the year 2027, the locations of these wells are critical to monitoring future plume movement and evaluating the necessity for the installation of an additional extraction well in the vicinity of Avery Road or Canal View Road. Until steady state conditions have been re-established in the aquifer and the necessity for an additional extraction well has been evaluated, continue to monitor wells MW-223M1 and MW-223M2 on a semi-annual sampling frequency.

5. **MW-23M1:** Table 4-1 recommends that the sampling frequency for monitoring well MW-23M1 be reduced from semi-annual to annual. However, this monitoring well is located adjacent to extraction well EW-01 and is critical to documenting the water level draw downs and RDX concentration reductions created by the extraction well. Until steady state conditions have been re-established in the aquifer, continue monitoring well MW-23M1 on a semi-annual sampling frequency.

6. **MW-89M2:** Table 4-1 recommends that the sampling frequency for monitoring well MW-89M2 be reduced from semi-annual to annual. However, this monitoring well is located in the most contaminated portion of the RDX plume upgradient of the extraction system and should continue to be monitored on a semi-annual basis to document the attenuation of the plume as predicted by the fate and transport simulations. Until steady state conditions have been re-established in the aquifer, continue monitoring well MW-89M2 on a semi-annual sampling frequency.

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO
ATTENTION OF

February 22, 2013

Engineering/Planning Division
Geo-Environmental Engineering Branch

Ms. Lynne Jennings
EPA – New England, Region 1
5 Post Office Square – Suite 100
Mail Code OSRR7-3
Boston, Massachusetts 02109-3912

Mr. Len Pinaud
Massachusetts Department of Environmental Protection
20 Riverside Drive
Lakeville, Massachusetts 02347

Re: Impact Area Groundwater Study Program
USEPA Region I Administrative Orders SDWA 1-97-1019 and 1-2000-0014
Memorandum of Resolution for Massachusetts Department of Environmental Protection
Comments on the Draft Central Impact Area Interim Environmental Monitoring Report,
January 2011 through December 2011

Dear Ms. Jennings and Mr. Pinaud:

On behalf of the National Guard's Impact Area Groundwater Study Program (IAGWSP), the U.S. Army Corps of Engineers (USACE) is pleased to provide the enclosed Memorandum of Resolution (MOR). This MOR is for Massachusetts Department of Environmental Protection (MassDEP) comments on the Responses to Comments Letter (RCL), dated October 10, 2012, for the Draft Central Impact Area Interim Environmental Monitoring Report, January 2011 through December 2011, dated June 2012. Comments were received on the Draft report from MassDEP in a letter dated June 27, 2012. Feedback from MassDEP was provided at a comment resolution meeting (CRM) held on January 16, 2013.

Your approval of the enclosed MOR is requested by March 7, 2013.

Please contact Dave Hill of the IAGWSP or Mark Anderson of USACE if there are any questions.

Sincerely,

Anthony T. Mackos, P.E.
Chief, Engineering/Planning Division

Enclosure

Copy Furnished:
Hard Copy:
EPA: Desiree Moyer

Electronic:
IAGWSP: Ben Gregson, Dave Hill, Marcia Goulet
EPA: Erin Sanborn
USACE: Gina Kaso, Jay Ehret, Mark Anderson, Dave Margolis, Ken Heim, Marie Wojtas

**Impact Area Groundwater Study Program**
**Memorandum of Resolution for**
**Massachusetts Department of Environmental Protection Responses to Comments on the Draft Central Impact Area Interim Environmental Monitoring Report**
**January 2011 through December 2011**
**Dated: June 2012**

**Massachusetts Department of Environmental Protection Comments (Letter Dated: June 27, 2012) on DRAFT Central Impact Area Interim Environmental Monitoring Report, January 2011 through December 2011**

**General Comment:**

MassDEP would like to schedule a meeting to discuss the modifications to the CIA chemical monitoring network proposed by the IAGWSP in the Report. MassDEP notes that there are currently no monitoring wells located downgradient of MW-123M1 located along southern leading edge of the CIA RDX plume. RDX concentrations have rapidly increased in this well over the last two years and it is not possible to track the migration of RDX in the aquifer from MW-123M1 with the existing CIA monitoring well network. Therefore, MassDEP recommends that additional monitoring wells be installed downgradient of MW-123M1.

MassDEP also notes that there are large areas (up to 3,000' in length) along the longitudinal core of the CIA plume upgradient and downgradient of Pocasset Sandwich Road that lack any monitoring points. The monitoring wells comprising the Pocasset Sandwich Road transect are the only control points located over a greater than one mile interval of the CIA RDX plume core. These monitoring gaps represent approximately 10 years travel time of the CIA plume in the aquifer in both the upgradient and downgradient directions from Pocasset Sandwich Road and result in significant uncertainties in RDX mass distribution in these areas.

**Response**: The IAGWSP agrees that a meeting to discuss the recommendations to the CIA chemical monitoring network would be a very efficient way to address any remaining comments and the IAGWSP will arrange a meeting with EPA and MADEP.

The IAGWSP recognizes that there are no monitoring wells directly downgradient of MW-123M1. However, the increase in RDX concentrations measured at MW-123M1 since 2008 were expected, based on the RDX concentrations measured MW-209M1, which is located upgradient and at approximately the same elevation. The maximum observed RDX concentration of approximately 8 µg/L at MW-209M1 was measured in 2009, which is expected to be more than the ultimate maximum concentration measured at MW-123M1 in the future. The IAGWSP is considering that an additional monitoring well should be installed approximately 1,000 feet downgradient of MW-123M1 to monitoring RDX as it continues downgradient, however, access to such a location may be difficult and the well may need to be placed on Wood Road. The IAGWSP will also recommend that monitoring wells be considered for installation upgradient and downgradient of Pocasset Sandwich Road along the longitudinal access of the main RDX plume.

**Additional Comment**: During the 1/16/13 comment resolution meeting, MassDEP requested that a couple of monitoring wells (i.e. MW-102M2 and MW-108M4 along Burgoyne Road for downgradient perchlorate monitoring), that were proposed to be eliminated in the CIA annual EMR, be retained in the chemical monitoring program

**Resolution: During the 1/16/13 comment resolution meeting, the IAGWSP agreed to retain monitoring wells MW-102M2 and MW-108M4 along Burgoyne Road for downgradient perchlorate monitoring.**

**Impact Area Groundwater Study Program**
**Memorandum of Resolution for**
**Massachusetts Department of Environmental Protection Responses to Comments on the**
**Draft Central Impact Area Interim Environmental Monitoring Report**
**January 2011 through December 2011**
**Dated: June 2012**

**Page-Specific Comment:**

Page 3-4, Section 3.2.1 Explosives, CS-19 Plume:
The text states, "The long and narrow CS-19 plume located southwest of the Main Plume is represented by a mid-plume well (58MW0016A) and a leading edge well (MW-183M1). The RDX concentrations at 58MW0016C have been consistently ND and well 58MW0002 is recommended for sampling instead of 58MW0016A in the future." The reference to 58MW0016C appears to be an error. MassDEP recommends revising the text to state that 58MW0016A was the well that was consistently non-detect for the explosive RDX.

**Response**: The Air Force currently monitors RDX in the CS-19 plume in accordance with a decision required under the IRP and, as a matter of fiscal law, the IAGWSP is precluded from expenditures associated with this site. The AFCEE report on CS-19 is submitted to the regulatory agencies on a regular basis.

**Additional Comment:** During the 1/16/13 comment resolution meeting, MassDEP pointed out that the intent of the original comment was to fix a typographical error for a well designation to be corrected from 15MW0016C to 15MW0016A. Therefore, the response did not address the comment.

**Resolution: During the 1/16/13 comment resolution meeting, IAGWSP agreed to correct the typographical well designation (change 15MW0016C to 15MW0016A), as requested by MassDEP.**

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

# Department of Environmental Protection

Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

RICHARD K. SULLIVAN JR.
Secretary

KENNETH L. KIMMELL
Commissioner

February 26, 2013

MAJ Shawn Cody
Impact Area Groundwater Study Program
PB 0516 West Outer Road
Camp Edwards, MA 02542

RE: **BOURNE**
Release Tracking Number: 4-0015031
Massachusetts Military Reservation (MMR)
**Draft Central Impact Area Interim Environmental Monitoring Report, January 2011 through December 2011 - MOR,** Concurrence

Dear Major Cody:

The Massachusetts Department of Environmental Protection ("MassDEP") received the Memorandum of Resolution dated February 22, 2013 (the "MOR") that was issued for the document entitled **"Draft Central Impact Area Interim Environmental Monitoring Report January 2011 through December 2011"** dated June 2012.

MassDEP concurs with the MOR.

Please incorporate this letter into the Administrative Record for the Central Impact Area Study Area. If you have any questions regarding this matter, please contact me at (508) 946-2871 or Elliott Jacobs at (508) 946-2786.

Sincerely,

This final document copy is being provided to you electronically by the Department of Environmental Protection. A signed copy of this document is on file at the DEP office listed on the letterhead.

Leonard J. Pinaud, Chief
State & Federal Site Management Section
Bureau of Waste Site Cleanup

P/EJ/lm
4-0015031.CIA MON COM MOR.02-25-2013.docx

ecc: Philip Weinberg, Regional Director
Millie Garcia-Serrano, Deputy Regional Director
MassDEP Boston
MassDEP Southeast Regional Office
MMR Senior Management Board
MMR Cleanup Team
Upper Cape Boards of Selectmen
Upper Cape Boards of Health

# Appendix D

# Project Note – J-1 Range Southern Leading Edge Well Field Design (EDMS No. 112152)

# FINAL PROJECT NOTE

Impact Area Groundwater Study Program
National Guard Bureau
Camp Edwards, MA

**Subject:** **REVISED DRAFT J-1 RANGE SOUTHERN LEADING EDGE WELL FIELD DESIGN**

**Date:** **29 September 2011**

## 1.0 INTRODUCTION

A Decision Document (DD) for the J-1 Range Operable Unit was signed by the United States Environmental Protection Agency (EPA) on 23 May 2011 with Massachusetts Department of Environmental Protection (MassDEP) concurrence dated 18 May 2011. The selected response action for the J-1 Range Southern plume was Alternative 4 (Focused Extraction with Two Wells, Monitored Natural Attenuation and Land-use Controls). The conceptual extraction well location and pipeline was presented as Figure 7 in the Decision Document and is included here as Figure 1.

This Project Note (PN) identifies the proposed location of the off base extraction well, pumping rate and predicted capture zone under baseline and high water table conditions. It also describes sampling to be conducted in order to determine the optimal extraction well screen design.

## 2.0 EXTRACTION, TREATMENT AND INFILTRATION (ETI) SYSTEM

As presented in the DD, "the selected remedy consists of a 125 gpm focused extraction system (the pre-existing extraction well on the base property and a new off-base extraction well operating for a combined total rate of 125 gpm), treatment with granular activated carbon (GAC) at an existing mobile treatment unit, and infiltration of the treated water via two infiltration trenches. The exact location of the off-base extraction well will be determined based on the most recent groundwater sampling data and will be optimized to achieve the best balance between efficiency, cleanup time, cost, implementability and environmental and worker impacts. The location of the pipeline will be based on the well location "

The Annual Environmental Monitoring Report for the J-1 Range Operable Unit (USACE, 2011) included an updated plan view of the RDX plume based on monitoring well data collected

through December 2010 as well as historical well and profile data (Figure 2). Based on an RDX profile detection of 74 µg/L in DP-549 (+4.4 to -0.6 feet msl) in April 2010 and an increasing trend of RDX in well MW-524M1 (screened from +6 to -4 ft msl), from 1.6 µg/L (November 2009) to 53.5 µg/L (December 2010), the orientation of the 20-200 µg/L RDX isopleth has been further aligned with Grand Oak Road. A subsequent sample collected since the plume was contoured detected RDX at 76.1 µg/L (May 2011). Water levels presented in the J-1 Range Southern Annual Report for 8 November 2010 indicate a southeast groundwater flow direction between drive points DP-549 and DP-548.

In the Final J-1 Range Remedial Investigation/Feasibility Study (RI/FS), dated July 2010, the modeled extraction well for Alternative 4 was located on Lady Slipper Lane, south of Lichen Lane, and started pumping in 2011.5 at a pumping rate of 90 gallons per minute (gpm) (see RI/FS Table 10-3). However, groundwater monitoring data collected after the RI/FS suggest that extraction well locations on Grand Oak Road will likely provide the most effective cleanup strategies. Thus, this well field design assessment involved a series of fate and transport simulations conducted to determine the most appropriate location to install an extraction well along Grand Oak Road. The transport simulations incorporated extraction wells located immediately downgradient of MW-524 (Alternative 4), at the intersection of Grand Oak Road and Pleasant Wood Drive, adjacent to DP-548 (Alternative 4A), and at the intersection of Grand Oak Road and Little Acorn Lane (Alternative 4B). The locations of the simulated extraction wells are depicted in Figure 2. Consistent with the RI/FS, the new simulations incorporated a reduction in the flow rate at the on base extraction well J1SEW0001 from 45 gpm to 35 gpm in order to maximize the extraction rate/capture zone at the off base extraction wells while staying within the 125 gpm treatment capacity of the J-1 Range Southern ETI system. The revised start-up date in the new simulations is March 2012.

As presented in Table 1, the data from the three new 2-well transport scenarios (Alternatives 4, 4A, and 4B) were evaluated to determine when RDX concentrations were predicted to fall below 6, 2, 0.6 µg/L and non-detect. Information for the single well alternative, Alt. 3 is presented in Table 1 for comparison but is not discussed further. For Alternatives 4, 4A and 4B simulations predicted that concentrations would fall below 2 µg/L, and 0.6 µg/L four years faster for Alt. 4A compared to Alt. 4B (2020 vs. 2024) and (2032 vs. 2036), respectively, and three years faster to achieve ND (2044 vs. 2047). Similarly, Alt. 4A achieved cleanup time frames 5 years faster

(2020 vs. 2025) to the 2 µg/L threshold, and 6 years faster for the 0.6 µg/L (2032 vs. 2038) and ND (2044 vs. 2050) thresholds, respectively. Mass removal was greatest for Alt. 4A (0.4 Kg) compared to Alt. 4 (0.3 Kg) and Alt. 4B (0.25 Kg). Therefore, the second extraction well for the J-1 southern plume ETI system is proposed to be located near the intersection of Grand Oak Road and Pleasant Wood Drive (as described under alternative 4A).

A capture zone analysis was conducted for Alt. 4A under model calibrated "baseline" conditions (groundwater elevations approximately 68.5 ft msl at the top of mound (TOM)) and under high water table conditions. The capture zone under baseline conditions encompasses a large portion of the RDX plume and contains all of the 6-20 µg/L and 20-200 µg/L RDX isopleths and most of the 0.6 to 2 µg/L contour. The result of the high water table simulation is similar to the baseline condition (Figure 3 – inset) and similarly does not capture the entire isolated RDX lobe south of Windsong Road. Contamination outside of the capture zone envelope (e.g., MW-522M2) is predicted to attenuate to below 2 µg/L and 0.6 µg/L by 2020 and 2032, respectively. Figure 4 depicts the RDX plume parallel to groundwater flow and shows the location of the proposed extraction well adjacent to DP-548. A two dimensional analytical capture zone was similarly determined using the method of Javandal & Tsang (EPA 2008). The limitations of the analytical calculation are presented in EPA 2008 and in Appendix A. The input parameters for the calculation are presented in Appendix A for a "base condition" and under a "high water table" simulation.

The hydraulic gradient used for the base condition was from the subregional flow model calibrated to 2003 water level conditions and was determined between drive point locations DP-549 and DP-548 (0.0006 feet per foot). Whereas, the hydraulic gradient under elevated water table conditions were based on measurements obtained from the site on 8 November 2010 and similarly determined for the area between DP-549 and DP-548 (0.0008 feet per foot). The analytically derived capture zone metrics under the base condition yielded a capture zone width at the well of approximately 760 feet compared to the numerical model predicted capture zone width of 600 feet. Similarly, the stagnation point using the analytical calculation is approximately 240 feet compared to the numerical model value of approximately 170 feet. Under an elevated water table condition the analytical model and numerical model had smaller capture zones and distance to the stagnation point as a result of a steeper measured hydraulic gradient. The capture zone width at the well using the analytical calculation was 570 feet and 450 feet for the

numerical model. Similarly, the stagnation point using the analytical calculation was determined to be 180 feet compared to 135 feet from the numerical model (Appendix A).

The numerical model considers recharge and the effects of the upgradient extraction well along with varying hydraulic properties of the aquifer materials which are not considered by the simple 2D calculation and is believed to be more accurate than the analytical calculation but both produce similar results. The vertical capture zone for the Alt. 4A simulation encompasses the plume to below -50 ft msl within the spatial extent defined by the plan view delineated in Figure 3.

The proposed location of the piping run to the on-base "existing treatment system" is depicted in Figure 3. The existing treatment system is capable of handling the increased flow. Following treatment of the influent water using GAC, see Figure 5, the water will be discharged to the existing infiltration trench. It should be noted that the DD indicates that effluent would be discharged to two infiltration trenches. The model run for Alterative 4 conducted as part of the RI/FS simulated groundwater being infiltrated into the existing infiltration trench (Figure 2).

## 3.0 PATH FORWARD

A soil boring will be advanced prior to the construction of the extraction well. The boring will be advanced using a reverse air-rotary rig. Both soil and groundwater profile samples will be collected at 10 foot intervals commencing at approximately +20 to -70 ft msl. Groundwater profile samples will be analyzed for explosives, and soil samples will be submitted to a geotechnical laboratory for grain-size analysis including hydrometer testing for fines. Additionally, each soil sample will be analyzed for Total Organic Carbon (TOC) to assist in determining contaminant retardation rates, for modeling purposes, if necessary. The extraction well design will be optimized to minimize infiltration of fines (and "wear and tear" on the pump) and select an appropriate sized sand pack. Grain size data, coupled with site-specific and other existing explosive profile data, will be used to determine the vertical screen placement and screen slot size opening. If during boring advancement a fine grained silt/clay layer is encountered and is of significant thickness, then it may be necessary to use a blank section of screen above and below, if necessary. The extraction well diameter will be 8-inch in order to accommodate an appropriate sized pump.

A subsequent project note will be issued that outlines: 1) the system start-up procedures including which wells will be part of the hydraulic monitoring program and which will allow for further estimation/refinement of the system's capture zone and their associated monitoring frequency and 2) any recommended changes to treatment plant chemical sampling.

## 4.0 CONCURRENCE

Concurrences with the recommendations presented in this project note are represented by the signatures below:

9/29/11

USEPA Representative

9/29/11

MassDEP Representative

12 Oct 11

IAGWSP Representative

## 5.0 ATTACHMENTS

**FIGURES:**

Figure 1: Conceptual J-1 Southern Extraction Well Location and Pipelines

Figure 2: Simulated Extraction Well Locations and Pipeline Routes

Figure 3: Proposed Extraction Well and Pipeline

Figure 4: Location of Proposed Extraction Well J1SEW0002 on Cross-Section A-A' Illustrating RDX Distribution

Figure 5: J-1 Range Southern Modular Treatment Unit Process Flow Diagram

**TABLES**

**Table 1:** Summary of Performance of J-1 Range Southern Alternatives

**APPENDIX**

Appendix A – J-1 Range Southern Capture Zone Analysis J1SEW0002 – Alternative 4A

Appendix B – Model Animations

## REFERENCES

United States Army Corp of Engineers (USACE). Final J-1 Range Northern and J-1 Range Southern Annual 2010 Environmental Monitoring Report, Camp Edwards, Massachusetts Military Reservation, Cape Cod, Massachusetts, June 2011.

United States Environmental Protection Agency Region 1. Decision Document – J-1 Range Operable Unit, Camp Edwards, Massachusetts Military Reservation, Cape Cod, Massachusetts, May 2011.

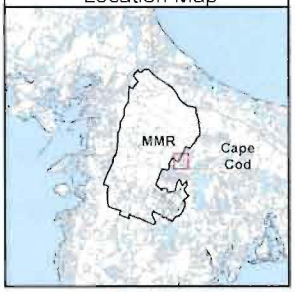
United States Environmental Protection Agency (EPA). A Systematic Approach for Evaluation of Capture Zones at Pump and Treat Systems. Final Project Report. EPA 600/R-08/003. EPA Office of Research and Development, Cincinnati, OH, January 2008.

# FIGURES


Legend

- Monitoring Well
- Existing Extraction Well
- Existing Treatment System
- Existing Effluent Piping
- Existing Infiltration Trench
- Potential Extraction Well Area
- Potential Pipe Route
- RDX plume > 0.6 µg/L
- Area of highest RDX concentration
- J-1 Range Boundary
- MMR Boundary

Location Map




N

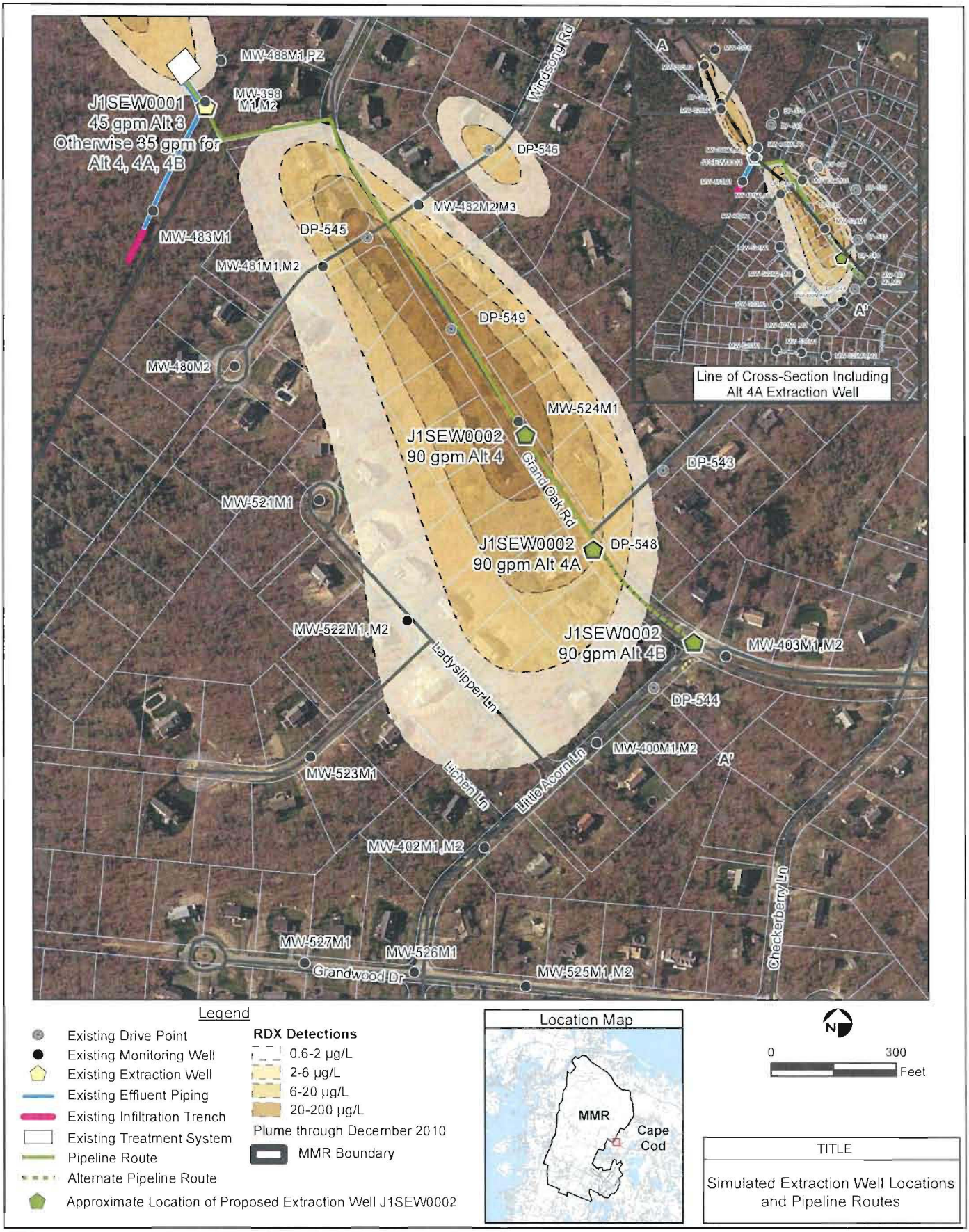
0 600 Feet

Conceptual J-1 Southern Extraction Well Location and Pipelines

M:\MMR\2011\J-1South\RRA\Figures\Fig1_070111.pdf
M:\MMR\2011\J-1South\RRA\MXDs\Fig1_070111.mxd
July 1, 2011 DWN MTW CHKD MRK

Impact Area Groundwater Study Program

FIGURE 1




Legend

- Existing Drive Point
- Existing Monitoring Well
- Existing Extraction Well
- Existing Effluent Piping
- Existing Infiltration Trench
- Existing Treatment System
- Pipeline Route
- Alternate Pipeline Route
- Approximate Location of Proposed Extraction Well J1SEW0002

**RDX Detections**

- 0.6-2 µg/L
- 2-6 µg/L
- 6-20 µg/L
- 20-200 µg/L

Plume through December 2010

MMR Boundary

Location Map




N

0 300 Feet

TITLE

Simulated Extraction Well Locations and Pipeline Routes

US Army Corps of Engineers
New England District

Impact Area Groundwater Study Program

FIGURE 2

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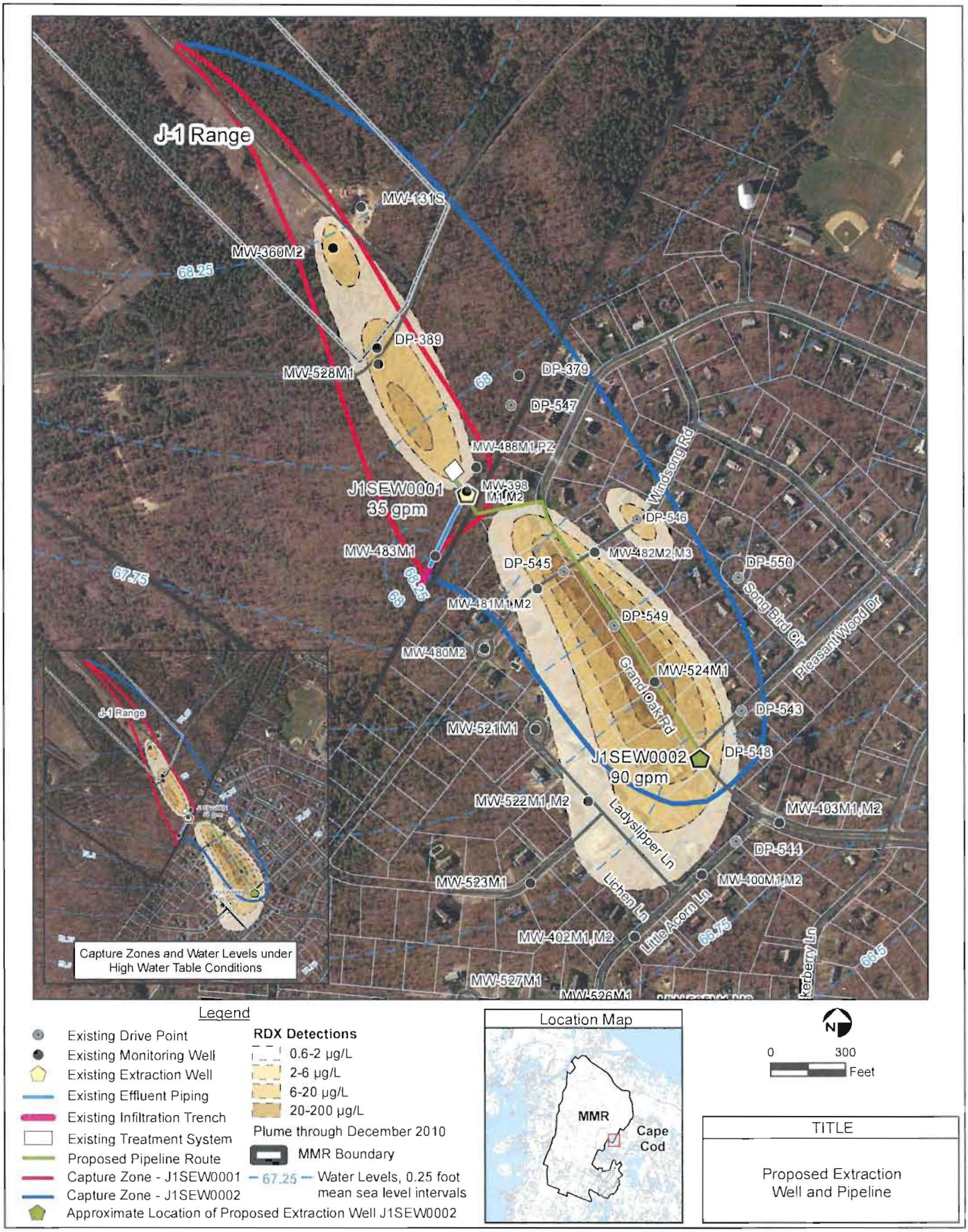
August 24, 2011 DWN: MTW CHKD: MRK




Legend

- Existing Drive Point
- Existing Monitoring Well
- Existing Extraction Well
- Existing Effluent Piping
- Existing Infiltration Trench
- Existing Treatment System
- Proposed Pipeline Route
- Capture Zone - J1SEW0001
- Capture Zone - J1SEW0002
- Approximate Location of Proposed Extraction Well J1SEW0002

**RDX Detections**

- 0.6-2 µg/L
- 2-6 µg/L
- 6-20 µg/L
- 20-200 µg/L

Plume through December 2010

MMR Boundary

67.25 — Water Levels, 0.25 foot mean sea level intervals

Location Map




N

0 300 Feet

TITLE

Proposed Extraction Well and Pipeline

US Army Corps of Engineers
New England District

Impact Area Groundwater Study Program

FIGURE 3

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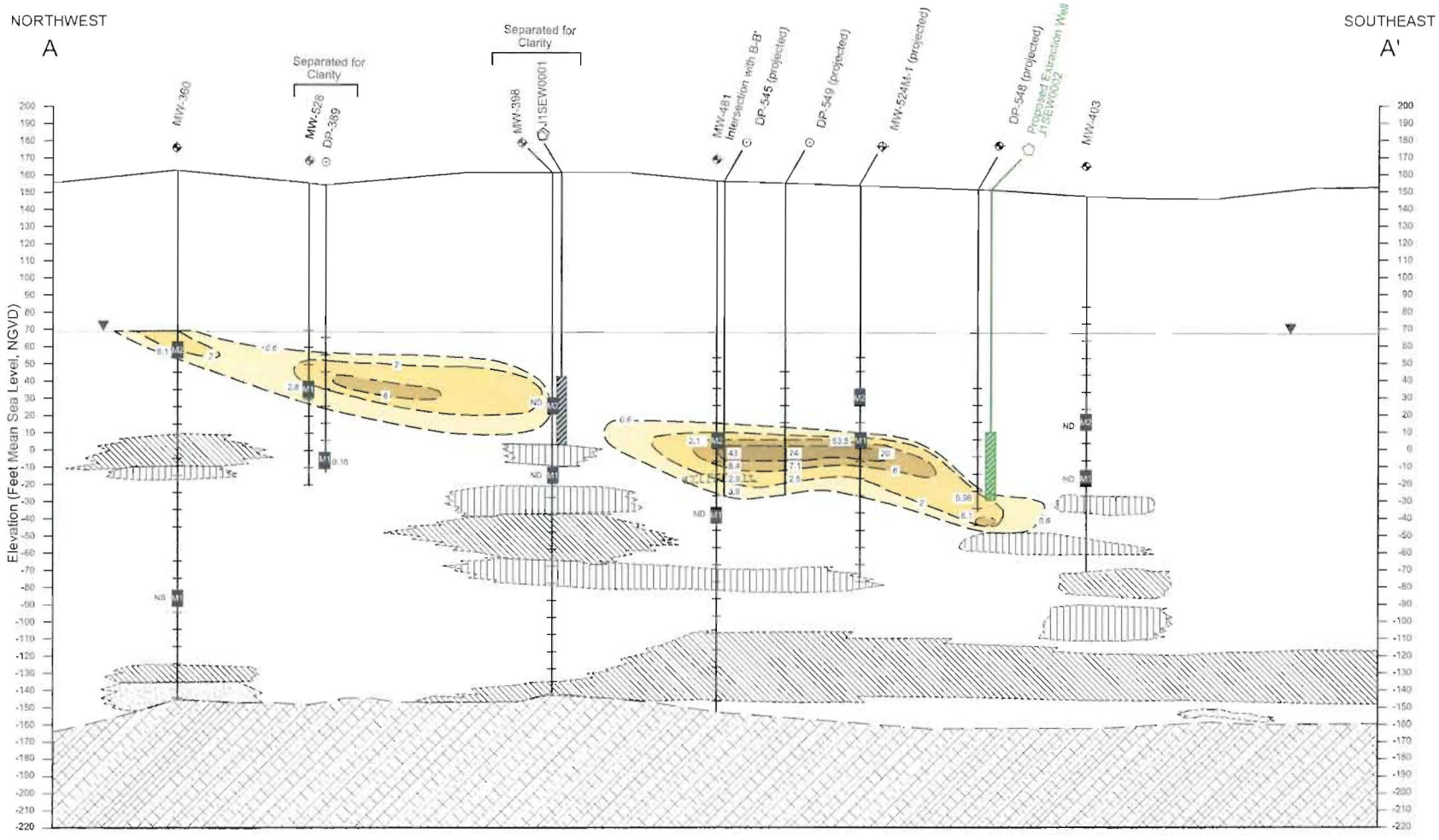
August 24, 2011 DWN: MTW CHKD: MRK




Legend

- Monitoring Well
- Drive Point Location
- Extraction Well
- Water table
- Well screen ID
- Proposed Extraction Well

Drilling Profile Interval Data (µg/L)

- J — Estimated Concentration
- ND — Nondetect
- µg/L — Micrograms per liter
- NS — Not Sampled

Extraction Well Screen

- Sand
- Silt/ Clay
- Sand and Silt/Clay
- Basal Gravel/Sand
- Bedrock

- 0.6-2 µg/L
- 2-6 µg/L
- 6-20 µg/L
- >20 µg/L

Note: Unlabelled drilling profile intervals indicate nondetects during screening.

Data Sources: 13 April 2011. EDMS Database.

DRAFT

V: 60
H: 300

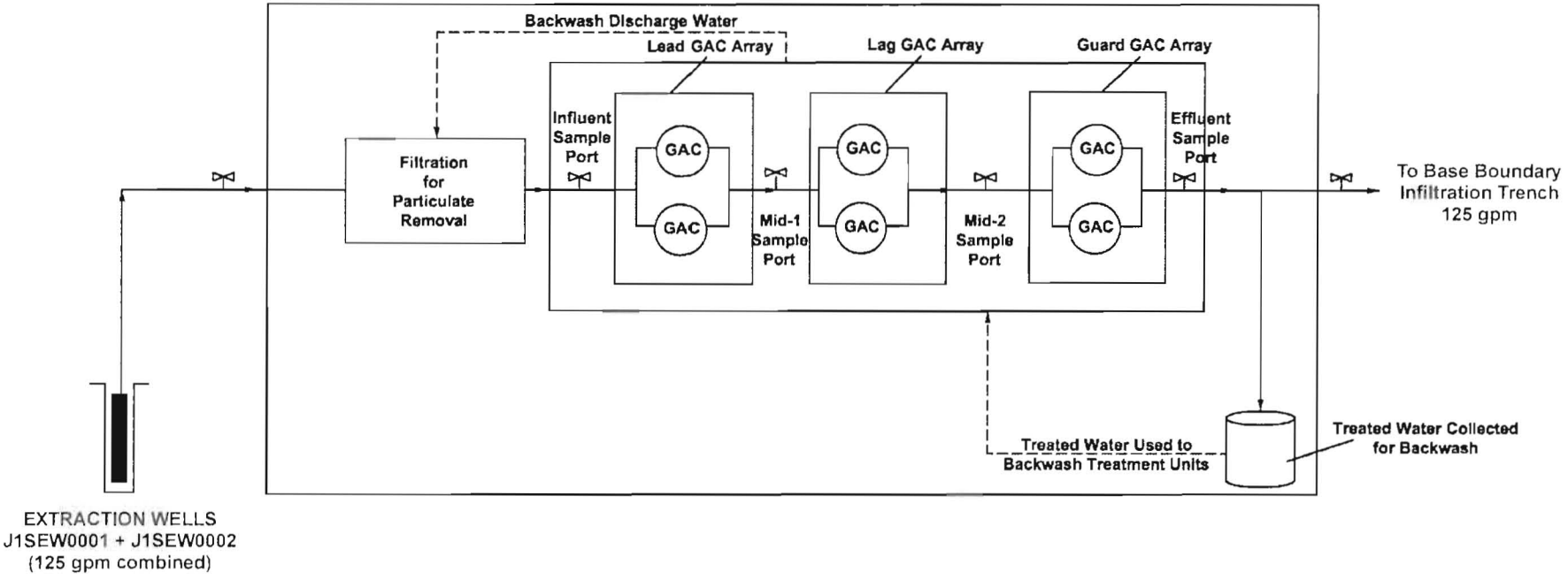
0

Scale in Feet

Impact Area Groundwater Study Program

Location of Proposed Extraction Well J1SEW002
J-1 Range South Plume Cross Section
A-A' Illustrating RDX Distributions
Massachusetts Military Reservation
Cape Cod, Massachusetts

Figure 4




US Army Corps of Engineers
New England District

GAC - Granular Activated Carbon

GPM - Gallons Per Minute

| TITLE |
| --- |
| J-1 Range Southern<br>Modular Treatment Unit<br>Process Flow Diagram |

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July 1, 2011 DWN: MTW CHKD: MRK

Impact Area Groundwater Study Program

FIGURE 5

# TABLES

TABLE 1

Summary of Performance of J-1 Range Southern Groundwater Alternatives

| Alternative | Well Location | Number of Extraction Wells | Total Extraction Rate (gpm) | Estimated Year RDX Concentrations Decrease Below 6 µg/L | Estimated Year RDX Concentrations Decrease Below 2 µg/L | Estimated Year RDX Concentrations Decrease Below 0.6 µg/L[1] | Estimated Year RDX Concentrations Decrease Below Non-Detect[2] | Extraction Well Shutoff[3] | RDX Mass Captured (Kg)[4] |
|---|---|---|---|---|---|---|---|---|---|
| 3 | J1SEW0001 | 1 | 45 | 2018 | 2030 | 2047 | 2069 | 2014 | 0.07 |
| 4 | J1SEW0001 + Well @ Grand Oak South of MW-524 | 2 | 125 | 2015 | 2025 | 2038 | 2050 | 2016 | 0.3 |
| 4A | J1SEW0001 + Well @ Grand Oak - South of Pleasant Wood | 2 | 125 | 2015 | 2020 | 2032 | 2044 | 2018 | 0.4 |
| 4B | J1SEW0001 + Well @ Grand Oak & Little Acorn | 2 | 125 | 2016 | 2024 | 2036 | 2047 | 2018 | 0.25 |

[1] - Based on a review of the animations, the estimated time all concentrations are below 0.6µg/L except for mass retained in low hydraulic conductivity units
[2] - Based on a review of the animations, the estimated time all concentrations are below 0.25µg/L except for mass retained in low hydraulic conductivity units
[3]- The estimated shut-off time for the new and existing extraction well is when influent RDX concentrations are predicted to fall below the method detection limit (0.2µg/L)
[4]- For Alternative 4, 4A, 4B, extraction well J1SEW0002 turns on 1 March 2012 and mass removal is based on this date. The single well scenario (Alt. 3) is based on 2010.5 to be consistent with FS Table 10-4.

gpm - gallons per minute
Kg - Kilograms
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
micrograms per liter

# Appendix A

## J-1 Range Southern Capture Zone Analysis J1SEW0002 – Alternative 4A

APPENDIX A

J-1 Range Southern
Capture Zone Analysis J1SEW0002 - Alternative 4A

| Input Required | Units | Base Condition - 2003 Values | 11/8/2010 - High Water Table Condition Values |
|---|---|---|---|
| Well - J1SEW0002 | | | |
| Aquifer or Screen Thickness (b) | ft | 95 | 95 |
| Hydraulic Conductivity (K) | ft/day | 200 | 200 |
| Hydraulic Gradient (I) | ft/ft | 0.00060 | 0.00080 |
| Transmissivity (K*b) | sq ft./day | 19000 | 19000 |
| Flow Rate (Q) | gpm | 90 | 90 |
| Flow Rate (Q) | cubic feet/day | 17326 | 17326 |
| | | | |
| 1/2 - Capture Width @ Well | ft | 380 | 285 |
| Ywell = ±Q/4Ti | | | |
| | | | |
| Full Capture Width @ Well | ft | 760 | 570 |
| Ywell = Q/2Ti | | | |
| | | | |
| 1/2 - Max Capture Width Upgradient of Well | ft | 760 | 570 |
| Ymax = ±Q/2Ti | | | |
| | | | |
| Full Max Capture Width Upgradient of Well | ft | 1520 | 1140 |
| Ymax = Q/Ti | | | |
| | | | |
| Stagnation Point | ft | 242 | 181 |
| Xo = -Q/2πTi | | | |

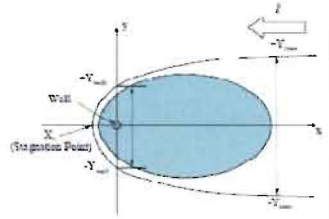
Capture Zone Envelope Shape for 11/8/2010

| X | Y |
|---|---|
| -181 | 1 |
| -163 | 100 |
| -101 | 200 |
| 25 | 300 |
| 131 | 350 |
| 294 | 400 |
| 414 | 425 |
| 578 | 450 |
| 765 | 470 |
| 823 | 475 |
| 1232 | 500 |
| 2076 | 525 |
| 4984 | 550 |
| -181 | -1 |
| -163 | -100 |
| -101 | -200 |
| 25 | -300 |
| 131 | -350 |
| 294 | -400 |
| 414 | -425 |
| 578 | -450 |
| 765 | -470 |
| 823 | -475 |
| 1232 | -500 |
| 2076 | -525 |
| 4984 | -550 |

## Capture Zone Width Calculation, One Extraction Well

*Assumptions*

- homogeneous, isotropic, confined aquifer of infinite extent
- uniform aquifer thickness
- fully penetrating extraction well(s)
- uniform regional horizontal hydraulic gradient
- steady-state flow
- negligible vertical gradient
- **no net recharge, or net recharge is accounted for in regional hydraulic gradient**
- no other sources of water introduced to aquifer due to extraction (e.g., from rivers or leakage from above or below)




$$x = \frac{-y}{\tan\left(\frac{2\pi Ti}{Q}y\right)} \quad -or- \quad y = \pm\left(\frac{Q}{2Ti}\right) - \left(\frac{Q}{2\pi Ti}\right)\tan^{-1}\left(\frac{y}{x}\right)$$

$$X_0 = -Q/2\pi Ti \quad ; \quad Y_{max} = \pm Q/2Ti \quad ; \quad Y_{well} = \pm Q/4Ti$$

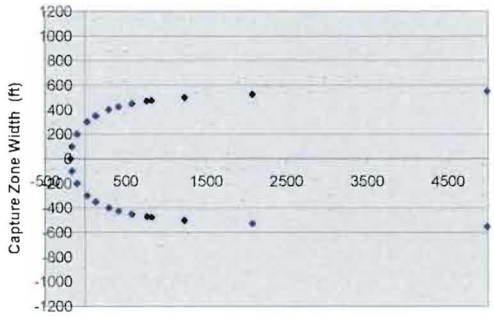
(must use consistent units, such as "ft" for distance and "day" for time)

*Where*

$Q$ = extraction rate
$T$ = transmissivity, $K \cdot b$
$K$ = hydraulic conductivity
$b$ = saturated thickness
$i$ = regional (i.e., pre-remedy-pumping) hydraulic gradient
$X_0$ = distance from the well to the downgradient end of the capture zone along the centerline of the flow direction
$Y_{max}$ = maximum capture zone width from the central line of the plume
$Y_{well}$ = capture zone width at the location of well from the central line of the plume

The above equation is used to calculate the outline of the capture zone. Solving the equation for $x = 0$ allows one to calculate the distance between the dividing streamlines at the line of wells ($Y = Y_{well}$) and solving the equation for $x = \infty$ allows one to calculate the distance between the dividing streamlines far upstream from the wells ($Y = Y_{max}$). One can also calculate the distance from the well to the stagnation point ($X_0$) that marks the downgradient end of the capture zone by solving for $x$ at $y = 0$. For any value of $y$ between 0 and $Y_{max}$, one can calculate the corresponding $x$ value, allowing the outline of the capture zone to be calculated.

Capture Zone Shape




Source:

EPA 600/R-08/003 | January 2008 | www.epa.gov/ord

EPA United States Environmental Protection Agency

# Appendix E

# Project Note – Changes to the Central Impact Area Monitoring Well Network

# PROJECT NOTE

**Client, Project and Location:**
Impact Area Groundwater Study Program
Central Impact Area Chemical Monitoring Network
Camp Edwards, MA

**Subject: Changes to Central Impact Area Chemical Monitoring Well Network**

**Date:** April 11, 2013

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## PURPOSE

The Army National Guard's Impact Area Groundwater Study Program (IAGWSP) submitted the Draft Central Impact Area Environmental Monitoring Report (IEMR), January 2011 through December 2011 to the U.S. Environmental Protection Agency (USEPA) and the Massachusetts Department of Environmental Protection (MassDEP) on 8 June 2012.

Comments were received from MassDEP in a letter dated June 27, 2012 and from the USEPA in a letter dated September 6, 2012.

A Response to Comments Letter (RCL) and redline/strike out copy of the IEMR text was emailed to the EPA and the MassDEP on 12 October 2012. A complete set of report figures, including cross-sections, was provided to the EPA and MassDEP on 31 October 2012. Revised Table 4-1 (Groundwater Monitoring Program Recommendations) was provided to EPA and MassDEP on 1 November 2012.

EPA provided additional comments on December 10, 2012. A comment resolution meeting (CRM) with EPA and MassDEP was held on January 16, 2013. A Memorandum of Resolution (MOR) was written for EPA and MassDEP comments on February 13, 2013, and February 22, 2013, respectively. MassDEP approved the MOR in a letter dated February 26, 2013. EPA provided additional comments in a letter dated April 2, 2013. The IAGWSP has accepted and incorporated EPA's final comments in the attached table.

This Project Note (PN) documents agency concurrence with the changes to the chemical monitoring network as described in the draft report and based on agency comments. The attached table presents the approved chemical monitoring network.

**CONCURRENCE**

Concurrence with the agreements presented in this project note is represented by the signatures below:

11 April 2013

USEPA Representative

April 12, 2013

MassDEP Representative

12 APR 2013

IAGWSP Representative

**Table 1** Approved Changes to Groundwater Monitoring Program – Central Impact Area

TABLE

## Table 1
## Approved Changes to Groundwater Monitoring Program
## Central Impact Area

| Well | Current Explosives Frequency (a. b) | Recommended Explosives Frequency (a, b) | Rationale For Explosives Sampling Reduction | Current Perchlorate Frequency (a, b) | Recommended Perchlorate Frequency (a, b) | Rationale For Perchlorate Sampling Reduction |
|---|---|---|---|---|---|---|
| 58MW0007B | N/A | N/A | N/C | S | Discontinue | Well is part of AFCEE's CS-19 plume. |
| 58MW0009C | N/A | N/A | N/C | S | Discontinue | Well is part of AFCEE's CS-19 plume. |
| 58MW0011D | A | Discontinue | Well is part of AFCEE's CS-19 plume. | N/A | N/A | N/C |
| 58MW0015A | N/A | N/A | N/C | S | Discontinue | Well is part of AFCEE's CS-19 plume. |
| 58MW0016A | S | Discontinue | Well is part of AFCEE's CS-19 plume. | N/A | N/A | N/C |
| 58MW0017B | N/A | N/A | N/C | A | Discontinue | Well is part of AFCEE's CS-19 plume. |
| MW-01M2 | S | A | RDX concentrations variable and declining since historic high 11 µg/L in 2001 to 1.62 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-01S | A | A | N/C | N/A | N/A | N/C |
| MW-02M1 | N/A | N/A | N/C | S | Discontinue | Perchlorate concentrations decreased from historic high of 1.4 µg/L in 2006 to 0.34 µg/L in 2011 - no known upgradient plume. |
| MW-02M2 | S | A | RDX concentrations decreased from historic high of 13 µg/L in 1999 to 0.68 µg/L in 2011 - annual data adequate to monitor trend. | A | Discontinue | ND perchlorate concentrations for 14 of 17 samples since 2001 and maximum measured 0.38J µg/L - no known upgradient plume. |
| MW-03M2 | A | A | N/C | A | Discontinue | ND perchlorate concentrations for 7 of 8 samples since 2003 and maximum measured 0.04J µg/L - no known upgradient plume. |
| MW-100M1 | S | A | RDX concentrations variable and between 1 µg/L and 3 µg/L in 24 samples collected since 2002 - annual data adequate to monitor trend. | S | Discontinue | Perchlorate concentrations decreased from historic high of 1.67J µg/L in 2001 to 0.13J µg/L in 2011 - no known upgradient plume. |
| MW-100M2 | N/A | N/A | N/C | S | Discontinue | Perchlorate concentrations decreased from historic high of 1.3 µg/L in 2004 to 0.096J µg/L in 2011 - no known upgradient plume. |
| MW-101M1 | A | A | N/C | N/A | N/A | N/C |
| MW-101S | N/A | N/A | N/C | A | Discontinue | ND perchlorate concentrations for 19 of 22 samples since 2001 and maximum measured 0.63J µg/L - no known upgradient plume. |
| MW-102M2 | S | A | ND RDX concentrations for 10 consecutive samples since 2007 - annual data adequate to monitor trend. | S | A | ND perchlorate concentrations for 16 of 24 samples since 2002 and maximum measured 0.50J µg/L - no known upgradient plume. |
| MW-105M1 | S | A | RDX concentrations variable and between 0.39 µg/L and 5.9 µg/L in 29 samples collected since 2000 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-106M1 | S | A | Ahead of upgradient RDX plume leading edge and ND RDX concentrations for 20 consecutive samples since 2000 - annual data adequate to monitor trend. | A | Discontinue | ND perchlorate concentrations for 9 of 19 samples since 2002 and maximum measured 0.97 µg/L - no known upgradient plume. |
| MW-107M1 | N/A | N/A | N/C | A | Discontinue | ND perchlorate concentrations for 16 of 21 samples since 2001 and maximum measured 1.39J µg/L in 2001 - no known upgradient plume. |
| MW-107M2 | A | A | N/C | A | Discontinue | Perchlorate concentrations decreased from historic high of 1.5 µg/L in 2005 to ND in 2011 - no known upgradient plume. |

**Table 1**
**Approved Changes to Groundwater Monitoring Program**
**Central Impact Area**

| Well | Current Explosives Frequency (a. b) | Recommended Explosives Frequency (a, b) | Rationale For Explosives Sampling Reduction | Current Perchlorate Frequency (a, b) | Recommended Perchlorate Frequency (a, b) | Rationale For Perchlorate Sampling Reduction |
|---|---|---|---|---|---|---|
| MW-108D | N/A | N/A | N/C | S | Discontinue | ND perchlorate concentrations for 22 of 23 samples since 2002 and maximum measured 0.64J µg/L - no known upgradient plume. |
| MW-108M1 | N/A | N/A | N/C | S | A | ND perchlorate concentrations for 19 of 25 samples since 2001 and maximum measured 0.379J µg/L - downgradient of known perchlorate plume. |
| MW-108M4 | N/A | N/A | N/C | S | A | ND perchlorate concentrations for 18 of 22 samples since 2001 and maximum measured 0.19J µg/L - screen too shallow to monitor known upgradient plume. |
| MW-110M2 | S | Discontinue | Well is peripheral to AFCEE's CS-19 plume. | N/A | N/A | N/C |
| MW-111M1 | N/A | N/A | N/C | S | Discontinue | Well is peripheral to AFCEE's CS-19 plume. |
| MW-111M2 | A | Discontinue | Well is peripheral to AFCEE's CS-19 plume. | A | Discontinue | Well is peripheral to AFCEE's CS-19 plume. |
| MW-112M1 | A | Discontinue | RDX concentrations less than 0.6 µg/L for 10 consecutive samples since 2004 - contamination better represented by MW112M2. With no clearly identified upgradient RDX source, sampling only the historically contaminated of the MW-112 cluster is more appropriate. | N/A | N/A | N/C |
| MW-112M2 | S | A | RDX concentrations variable and less than 2.5 µg/L in 28 samples collected since 2000 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-113M2 | S | A | RDX concentrations decreased from historic high of 15 µg/L in 2001 to 1.44 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-115M1 | A | Discontinue | ND RDX concentrations for 13 consecutive samples since 2001 and no known upgradient plume - MW37M2 downgradient is in program. | N/A | N/A | N/C |
| MW-123M1 | S | S | N/C | N/A | N/A | N/C |
| MW-123M2 | S | S | N/C | N/A | N/A | N/C |
| MW-135M2 | A | Discontinue | RDX concentrations decreased from historic high of 1.4 µg/L in 2001 to ND in 2011 - nearest upgradient plumelet is 3,000 feet away with historic maximum concentration of 1.8 µg/L. | N/A | N/A | N/C |
| MW-141M1 | N/A | N/A | N/C | S | Discontinue | ND perchlorate concentrations for 15 of 19 samples since 2002 and maximum measured 0.17J µg/L - no known upgradient plume. |
| MW-141M2 | N/A | N/A | N/C | S | Discontinue | Perchlorate concentrations decreased from historic high of 1.5 µg/L in 2002 to 0.23 µg/L in 2011 - no known upgradient plume. |
| MW-149M1 | A | A | N/C | N/A | N/A | N/C |
| MW-176M1 | S | S | N/C | N/A | N/A | N/C |
| MW-178M1 | S | A | Variable and declining RDX concentrations since historic high of 5 µg/L in 2005 to 1.85 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |

## Table 1
## Approved Changes to Groundwater Monitoring Program
## Central Impact Area

| Well | Current Explosives Frequency (a, b) | Recommended Explosives Frequency (a, b) | Rationale For Explosives Sampling Reduction | Current Perchlorate Frequency (a, b) | Recommended Perchlorate Frequency (a, b) | Rationale For Perchlorate Sampling Reduction |
|---|---|---|---|---|---|---|
| MW-179M1 | A | A | N/C | S | Discontinue | Perchlorate concentrations decreased from historic high of 1.4 µg/L in 2003 to 0.11J µg/L in 2011 - no known upgradient plume. |
| MW-180M3 | S | A | ND RDX concentrations for 23 consecutive samples since 2002 and only side gradient of plume - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-183M1 | S | Discontinue | Well is part of AFCEE's CS-19 plume. | N/A | N/A | N/C |
| MW-183M2 | S | Discontinue | Well is part of AFCEE's CS-19 plume. | N/A | N/A | N/C |
| MW-184M1 | S | A | RDX concentrations decreased from historic high of 24 µg/L in 2003 to 10 µg/L in 2006 and variable and between 5 µg/L and 10 µg/L since then - annual data adequate to monitor trend. | S | A | Perchlorate concentrations increased from historic low of 0.46 µg/L in 2006 to historic high of 1.2 µg/L in 2011 - annual data adequate to monitor trend. |
| MW-184M2 | N/A | N/A | N/C | S | Discontinue | ND perchlorate concentrations for 19 of 22 samples since 2002 and maximum measured 0.054J µg/L - no known upgradient plume. |
| MW-201M2 | S | Discontinue | Well is part of AFCEE's CS-19 plume. | N/A | N/A | N/C |
| MW-202M1 | A | A | N/C | N/A | N/A | N/C |
| MW-203M2 | S | A | RDX concentrations variable and between recently measured 0.21 µg/L and 2.9 µg/L in 20 samples collected since 2003 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-204M1 | S | A | RDX concentrations decreased from historic high of 9.9J µg/L in 2004 to 0.23 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-204M2 | S | A | RDX concentrations variable and between ND and 2.8 µg/L in 20 samples collected since 2003 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-207M1 | S | A | RDX concentrations decreased from historic high of 18 µg/L in 2002 to 5.32 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-208M1 | S | A | ND RDX concentrations for 20 consecutive samples since 2002 and only side gradient of plume - annual data adequate to monitor trend. | S | A | ND perchlorate concentrations for 19 of 21 samples since 2002 and maximum measured 0.44J µg/L - no known upgradient plume. |
| MW-209M1 | S | A | Increasing and variable RDX concentrations from historic low of 2.4 µg/L in 2002 to 7.42 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-209M2 | N/A | N/A | N/C | S | A | Perchlorate concentrations increased from historic low of 0.36J µg/L in 2006 to 1.27 µg/L in 2011 and downgradient of known upgradient plume - annual data adequate to monitor trend. |
| MW-212M1 | S | A | ND RDX concentrations for 23 consecutive samples since 2002 and only side gradient of plume - annual data adequate to monitor trend. | N/A | N/A | N/C |

## Table 1
## Approved Changes to Groundwater Monitoring Program
## Central Impact Area

| Well | Current Explosives Frequency (a. b) | Recommended Explosives Frequency (a, b) | Rationale For Explosives Sampling Reduction | Current Perchlorate Frequency (a, b) | Recommended Perchlorate Frequency (a, b) | Rationale For Perchlorate Sampling Reduction |
|---|---|---|---|---|---|---|
| MW-223M1 | S | S | N/C | S | Discontinue | ND perchlorate concentrations for 17 of 23 samples since 2002 and maximum measured 0.62J µg/L - monitoring maintained by upgradient MW23M1. |
| MW-223M2 | S | S | N/C | N/A | N/A | N/C |
| MW-235M1 | S | A | RDX concentrations decreased from historic high of 45 µg/L in 2006 to 0.78 µg/L in 2011 and upgradient of main plume - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-23M1 | S | S | N/C | S | A | Perchlorate concentrations increased from historic low of 0.1J µg/L in 2009 to 0.38 µg/L in 2011 and downgradient of known upgradient plume - annual data adequate to monitor trend. |
| MW-249M2 | S | A | RDX concentrations decreased from historic high of 1.6 µg/L in 2004 to 0.44 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-25 | S | A | RDX concentrations variable and between ND and 2 µg/L in 24 samples collected since 1999 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-27 | A | A | N/C | N/A | N/A | N/C |
| MW-37M2 | A | A | N/C | N/A | N/A | N/C |
| MW-38M3 | S | A | RDX concentrations decreased from historic high of 3 µg/L in 1999 to 0.68 µg/L in 2011 - annual data adequate to monitor trend. | S | A | Perchlorate concentrations increased from 1.0 µg/L in 2003 to 3.8 µg/L in 2007 and then decreased to 0.96 µg/L in 2011 - annual data adequate to monitor trend. |
| MW-38M4 | S | A | RDX concentrations variable and between ND and 2.4 µg/L in 33 samples collected since 1999 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-39M1 | N/A | N/A | N/C | N/A | A | More appropriate elevation for measuring perchlorate plume than MW-39M2. |
| MW-39M2 | N/A | N/A | N/C | A | Discontinue | N/C |
| MW-40S | A | A | N/C | N/A | N/A | N/C |
| MW-42M2 | S | A | ND RDX concentrations for 33 consecutive samples since 1999 and only side gradient of plume - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-42M3 | S | A | ND RDX concentrations for 31 consecutive samples since 1999 and only side gradient of plume - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-43M2 | S | A | RDX concentrations decreased from historic high of 7.3 µg/L in 2006 to 0.6 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-44M1 | A | A | N/C | A | Discontinue | Perchlorate concentrations variable and between 0.40 µg/L and 1.3 µg/L in 15 samples collected since 2002 - no known upgradient plume. |

**Table 1**
**Approved Changes to Groundwater Monitoring Program**
**Central Impact Area**

| Well | Current Explosives Frequency (a. b) | Recommended Explosives Frequency (a, b) | Rationale For Explosives Sampling Reduction | Current Perchlorate Frequency (a, b) | Recommended Perchlorate Frequency (a, b) | Rationale For Perchlorate Sampling Reduction |
|---|---|---|---|---|---|---|
| MW-477M1 | A | A | N/C | A | Discontinue | Perchlorate concentrations decreased from 0.82 µg/L in 2007 to ND in 2011 - no known upgradient plume. |
| MW-477M2 | A | A | N/C | A | Discontinue | ND perchlorate concentrations for 6 of 7 samples since 2007 and maximum measured 0.05J µg/L - no known upgradient plume. |
| MW-485M1 | A | A | N/C | N/A | N/A | N/C |
| MW-486M1 | A | A | N/C | N/A | N/A | N/C |
| MW-487M2 | A | A | N/C | A | Discontinue | Perchlorate concentrations variable and between 0.53J µg/L and 0.99 µg/L in 7 samples collected since 2007 - no known upgradient plume. |
| MW-50D | A | Discontinue | ND RDX concentrations for 25 of 28 samples since 1999 (maximum 0.52J µg/L) and ND since 2007 - no upgradient plume. | N/A | N/A | N/C |
| MW-50M2 | N/A | N/A | N/C | S | Discontinue | ND perchlorate concentrations for 14 of 19 samples since 2002 and maximum measured 0.18J µg/L - no known upgradient plume. |
| MW-51M2 | A | A | N/C | N/A | N/A | N/C |
| MW-59S | A | Discontinue | RDX concentrations less than 0.6 µg/L for 8 of 9 samples since 2003 and 0.64 µg/L in 2008 - no upgradient plume at screen elevation. | N/A | N/A | N/C |
| MW-85M1 | S | Discontinue | RDX concentrations decreased from historic high of 29 µg/L in 2000 to ND in 2011 - no known immediately upgradient plume. | A | Discontinue | ND perchlorate concentrations for 19 of 21 samples since 2001 and maximum measured 0.5J µg/L - no known upgradient plume. |
| MW-86M1 | N/A | N/A | N/C | S | Discontinue | Perchlorate concentrations increased from 0.44J µg/L in 2003 to 1.6 µg/L in 2009 and then decreased to 0.58 µg/L in 2011 - no known upgradient plume. |
| MW-86M2 | S | A | RDX concentrations decreased from historic high of 3 µg/L in 2001 to 0.37 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-86S | S | A | RDX concentrations variable and declining since historic high of 4.7J µg/L in 2002 to 1.05 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-87M1 | S | A | RDX concentrations decreased from historic high of 6.5J µg/L in 2000 to 0.89 µg/L in 2011 - annual data adequate to monitor trend. | S | A | Perchlorate concentrations increased from historic low of 0.67J µg/L in 2004 to 5.69 µg/L in 2011 and near southwest edge of known plume - annual data adequate to monitor trend. |
| MW-88M2 | S | A | RDX concentrations decreased from historic high of 7.7 µg/L in 2000 to 1.79 µg/L in 2011 - annual data adequate to monitor trend. | S | A | Perchlorate concentrations increased from historic low of 0.505J µg/L in 2004 to 5.46 µg/L in 2011 and in center of known plume - annual data adequate to monitor trend. |
| MW-88M3 | N/A | N/A | N/C | S | Discontinue | ND perchlorate concentrations for 9 of 12 samples since 2002 and maximum measured 0.12J µg/L - screen to shallow to monitor center known plume. |
| MW-89M2 | S | S | N/C | A | A | N/C |

**Table 1**
**Approved Changes to Groundwater Monitoring Program**
**Central Impact Area**

| Well | Current Explosives Frequency (a, b) | Recommended Explosives Frequency (a, b) | Rationale For Explosives Sampling Reduction | Current Perchlorate Frequency (a, b) | Recommended Perchlorate Frequency (a, b) | Rationale For Perchlorate Sampling Reduction |
|---|---|---|---|---|---|---|
| MW-89M3 | A | A | N/C | N/A | N/A | N/C |
| MW-90S | A | A | N/C | A | Discontinue | ND perchlorate concentrations for 17 of 20 samples since 2001 and maximum measured 0.52J µg/L - no known upgradient plume. |
| MW-91M1 | S | A | RDX concentrations decreased from historic high of 18 µg/L in 2000 to 2.08 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-91S | A | A | N/C | A | Discontinue | Perchlorate concentrations decreased from historic high of 5J µg/L in 2001 to ND in 2011 - no known upgradient plume. |
| MW-93M1 | A | A | N/C | S | Discontinue | Perchlorate concentrations decreased from historic high of 3J µg/L in 2001 to 0.77 in 2011 - no known upgradient plume. |
| MW-94M1 | A | Discontinue | Well is peripheral to AFCEE's CS-19 plume. | N/A | N/A | N/C |
| MW-94M2 | A | Discontinue | Well is peripheral to AFCEE's CS-19 plume. | N/A | N/A | N/C |
| MW-95M1 | S | A | RDX concentrations decreased from historic high of 6.1 µg/L in 2002 to 1.53 µg/L in 2011 - annual data adequate to monitor trend. | N/A | N/A | N/C |
| MW-95M2 | N/A | N/A | N/C | S | A | Perchlorate concentrations decreased from historic high of 1.38 µg/L in 2004 to 0.23 in 2011 - side gradient of known plume. |
| MW-96M2 | A | A | N/C | S | Discontinue | ND perchlorate concentrations for 14 of 18 samples since 2001 and maximum measured 0.39J µg/L - no known upgradient plume. |
| MW-97M2 | S | Discontinue | ND RDX concentrations for 28 consecutive samples since 2003 and only side gradient of plume - no known immediately upgradient plume. | N/A | N/A | N/C |
| MW-98M1 | A | A | N/C | A | Discontinue | Perchlorate concentrations variable and between 0.17J µg/L and 0.54J µg/L in 20 samples collected since 2001 - no known upgradient plume. |
| MW-99S | A | A | N/C | A | Discontinue | ND perchlorate concentrations for 11 of 15 samples since 2003 and maximum measured 0.48J µg/L - no known upgradient plume. |
| OW-2 | S | A | RDX concentrations decreased from historic high of 16 µg/L in 2004 to ND in 2011 - annual data adequate to monitor trend. | S | Discontinue | Perchlorate concentrations decreased from historic high of 1.67J µg/L in 2002 to 0.2 µg/L in 2011 - no known upgradient plume. |

Notes:
ft = feet
m = meters
msl = mean sea level
N/A not applicable
N/C = No recommended change

(a)
A = annually
S = semi-annually

(b)
Explosives = EPA Method SW846-8330
Perchlorate = EPA Method SW846-6850